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# An Address
ON
# ACCURACY IN DIAGNOSIS.

*Being the concluding part of the Presidential Address at the Annual Meeting of the British Medical Association delivered on July 20th, 1921,*

BY DAVID DRUMMOND, C.B.E., M.A., M.D. DUB., D.C.L. DURH.,
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In thus suggesting that there is room for improvement in our service, we must remember we are dealing with knowledge in the practice of medicine and surgery, which it is the aim of all workers, in the interests of all, to raise to the highest possible level of exactness. This is a design to which every practitioner could under favourable circumstances contribute, though at present he is heavily handicapped, as he has to live and work in the most depressing atmosphere of constant doubt—of problems unanswered, of opportunities lost. This wail, for it is a wail, will probably suggest to the minds of all here one of the chief difficulties in the way of progress, and will, I hope, elicit a sympathetic interest in the problem—How are these difficulties to be overcome?

## POST-MORTEM VERIFICATION.

It may perhaps be a surprise to many, but not, I suspect, to the more thoughtful section of the public, that the diagnosis in many cases (very many, I am afraid) is only a matter of opinion, which must remain in doubt unless cleared up by an autopsy, and in making this statement it will not, I trust, be thought that I am casting blame upon the doctor; far from it, for the marvel is that his opinion is so often correct, considering the difficulties with which his path is beset in his endeavour to contribute his quota to the common cause. I have alluded to this state of matters as an atmosphere of doubt; it is more so, it is in the highest degree discouraging and is calculated to kill the scientific spirit with which it is our aim at college to inspire all our students; and in claiming the right of the doctor to follow up the lines of his training, I am urging a change in the interests of all; in the interests of scientific medicine and surgery, and particularly in the interests of his patients.

I found myself recently discussing the present status of the medical practitioner with a prominent member of our profession, a man of high standing and wide experience as a general practitioner, and the conversation inclined towards the question of education and training of the doctor, and I asked him what in his opinion could be done to improve his scientific and professional standing. His reply was definite and uncompromising. "The one thing above all others," he said, "calculated to elevate and generally to improve the standing of the general practitioner is opportunity for post-mortem verification or the contrary of his expressed opinion." He added, "We shall never be any better until we are entitled to claim, with the knowledge that we shall not be denied, a post-mortem examination." I was much impressed by this view of the matter, coming as it did from one whose knowledge and experience of general practice could not fail to make clear to him the revolutionary character of the suggestion, and how inconvenient it might be to have to acknowledge our mistakes, for, indeed, the opinion my friend expressed coincided fully with my own. Revolutionary it certainly would be; but what an enormous gain to have our doubts set at rest; and it is not too much to hope that before very long both the public and the profession will be educated up to feel that truth above all things must prevail. Could we but engender amongst our members the love of truth as the fundamental essence of our professional life and the mainspring of our activities, and could we also inspire eagerness to search after and courage to proclaim it, what a noble profession would be ours! I believe the desire to rise and live up to our loftiest professional aims is there; but we are unfortunately trammelled and moulded by public opinion and prejudice and the requirements imposed upon us by the State. The very loftiness of the estimate which is entertained of the doctor is his undoing, for he is set tasks which he cannot perform; he is expected to make bricks without straw, and not infrequently we assume to ourselves personally the public estimation of our calling, though this I believe in the main to be a failing of youth.

## ITS PLACE IN POST-GRADUATE TRAINING.

In urging the importance, nay more, the necessity for greater facilities for post-mortem investigation in clearing up doubts which must arise in the mind of the doctor in many cases, I am indicating the most important step towards a rational scheme of post-graduate training. It is, perhaps, unnecessary to insist upon the enormous advantage it would be were post-mortem examinations universal, for all, save those who never make them, are prepared to admit their educational value, and I have little doubt that the opposition to a movement in this direction, begotten of prejudice in the public mind, would soon vanish were the incalculable service to the science of medicine made sufficiently clear. I have said that medicine has advanced in every direction, but I regret to have to admit that the advance along certain diagnostic paths is not as rapid as we could wish, and not nearly so rapid as it would be were post-mortem examinations more frequent; and I believe I am stating what is correct when I say that in private practice they are not even so frequent as they were in my earlier days. It is true that in a few of our large hospitals throughout the country, in the wards of which students of medicine enjoy the inestimable privilege of clinical study, the enlightened committee of management now sanctions an autopsy in every case under fitting limitations, but in the majority of our clinical hospitals the old restrictions still obtain and the study of pathology is still hampered as of old to the great disadvantage of the medical school and, if they but knew, to the public themselves.

Did anyone question the service rendered diagnosis by the substitution of the unclouded prospect of certainty for the befogged atmosphere of uncertainty—the educational value of exact diagnosis in a doubtful case—let him ask himself what he has learnt from the modern surgeon's exploratory operations, and he will candidly admit that nearly all he knows of abdominal diagnosis is the outcome of the lessons he has learnt in consequence of the ease and impunity with which we can now "open and see." It is the examination *ante* which is often effectual in averting the *post*.

We all recognise the value of post-graduate teaching in connexion with the Fellowship of Medicine and Post-Graduate Association, and similar courses of study instituted in various centres, and no doubt many take advantage of these opportunities, but after all they are only supplementary to the curriculum of the student and cannot take the place of the natural progress and ever-ripening experience, the outcome of facilities which I would like every practitioner to be able to claim as a right, and for which I have little doubt sooner or later the State will make provision in the interests of medical science and the health of the nation.

## ACCURATE DIAGNOSIS IN DAILY WORK.

The importance of accuracy in diagnosis cannot be overstated, and it is unnecessary to insist upon the value of the autopsy in promoting it as well as in

the training of the practitioner. As a scientific profession we naturally aim at precision, but unfortunately take no steps to secure it in our daily work. Of what value, has any one ever asked himself, are the statistics upon which the computing officials of our Insurance Companies are accustomed to base certain actuarial statements which are accepted as guides to practice because they are founded upon statistics compiled from official returns which, we have reason to believe, are so hopelessly inaccurate that the results can at best be nothing more than rule of thumb guides? Some may possibly doubt this statement. Well, let anyone that does, institute an inquiry, say, into the accuracy of the death certificates as tested by post-mortem examinations in even the best of our clinical hospitals, and he will have his eyes opened, and his knowledge of practice may possibly lead him to draw a still more striking inference from the contemplation of the question of the accuracy of the returns throughout the country generally—outside the walls of our great hospitals.

Accuracy in diagnosis is, as I have said, of the first importance, but the search after truth in nearly every other direction as well is lax and indeterminate. Time will not permit me to pursue this most important subject, but I am convinced that until there is instituted in every large teaching hospital connected with our medical schools a statistical department with a highly trained official at its head—call him registrar, or what you will—whose duty it would be to collect and systematise all returns having accuracy as the constant aim, we shall continue to flounder on as we have been doing, groping after truth, and failing to read correctly the signs ready to hand and awaiting interpretation.

### PRESENT WASTE OF RAW MATERIAL.

At present the returns are grossly inaccurate, and therefore many of the deductions are necessarily fallacious, whilst, for the want of a proper system, the waste of what I may call raw material is simply appalling. Observations of interest are made daily in the wards, post-mortem rooms, and the adjacent pathological and chemical laboratories of every teaching hospital of which use is never made, perhaps because they are isolated and their significance is not at the moment recognised. They are forgotten and, in many instances, pass even from the minds of the physician, surgeon, or pathologist who made them. Prof. Vincent tells us of a physicist who, long before the discovery of X rays by Röntgen, noticed cloudy markings upon his photographic plates whenever they were brought near to Crookes's tubes, but disregarded the observation as of no value. But instances could be indefinitely multiplied illustrative of the loss to science that may be involved in the failure to note, collect, collate, and investigate simple observations in medicine, surgery, pathology, and collateral sciences. This loss, which cannot be estimated, may very properly be compared with the loss to commerce and science involved in the crude uses to which tar was put before the discovery by Perkin of the colour mauve in the year 1856. Then followed other colours, together with benzine and its homologues, toluene, xylene, naphthalene, and anthracene, not to mention the manifold uses to which the long series of coal-tar derivatives have been put. So, without any great stretch of imagination, may we regard the waste of which I have spoken.

The fact is, the work in every hospital ward, post-mortem room, and scientific laboratory engaged in the investigation of disease for the purposes of teaching should be regarded in the light of research, and I think the assumption is only reasonable that the establishment of whole-time professorships in medicine, surgery, and midwifery in connexion with all our medical schools, together with properly organised registration departments, would help very greatly to promote this most important side of the teacher's functions. The importance of collecting this raw material, at present running to waste, will be recognised by all, but especially by teachers themselves, who would have the results of their own labours, of their hospital's records and statistics by which to drive home the lessons they would inculcate, for, as Prof. Vincent very properly points out, students pay more attention to the personal observations of their teachers than to text-book statements. And further, research workers would be in possession of vast quantities of accurately noted and properly collated facts for the pursuance of their investigations. Thus our teaching facilities would be promoted, and our methods of instruction put upon a more satisfactory basis, whilst our knowledge would increase more rapidly and our science correspondingly benefit, and, transcending all, truth would be recognised as the presiding genius of our activities—our great purpose, our highest aspiration.

### PROFESSIONAL EDUCATION A CONTINUOUS PROCESS.

The history of the general practitioner, the cornerstone of the profession of medicine, told in terms of his professional education, is, or should be, a record of continuous progress from the first stage of the introduction to the end of the last chapter, when finis marks his retirement or his decease. He travels along a road, at times rough and uphill, in which there is no break, and perhaps the easiest going, from the education point of view, is the outset, carefully indicated by notices bearing the official imprint of the curriculum. It is greatly to his advantage if, at the end of this part of his journey, he can secure a resident appointment in a first-class hospital. This cannot be too strongly emphasised, and it is impossible to over-estimate the value of six months' intensive training at this period of professional life, when responsibility and a certain measure of authority under discipline, with ample opportunity for the study of special problems, unite to shape and develop character, and furnish illustrations in abundance of the principles already forming the foundation of that superstructure of experience, the endowment of the trusted practitioner.

So helpful is this experience that the young graduate who has enjoyed it begins life with a take-off vastly superior to his neighbour who has not—who is, indeed, in comparison badly handicapped in the race of life. I feel so strongly upon this point—the advantage of a resident appointment—that I would like to take this opportunity to warn the rising generation against the practice, which is becoming only too common, of declining these appointments in order that an immediate financial return may be secured. It is true there are not at present hospital appointments for all, but sooner or later, with perhaps some adjustment of the period to be served, this want will be remedied, and I venture to hope that the time will come when a resident appointment will be found to be an essential feature of the training of the doctor. Having regard to its educational value, the period of the student's career at which the appointment is held is, I believe, a matter of great importance. During the war, when every available practitioner was called upon to serve, our hospitals had to fall back upon students to fill the posts usually held by qualified doctors, and it was the common experience that in the case of many students who were appointed before they had reached a certain stage in their professional training to fill these gaps the appointment and all that it entailed was not only valueless but actually harmful. But coming in due course at the end of the curriculum, and after the final examination, the experience is most useful, and cannot fail to produce a lasting impression upon the future career.

### QUALITIES NEEDED FOR SUCCESS IN PRACTICE.

Whilst urging thus strongly the importance of post-graduate training I must not overlook the claims of the student to whose work, training, and examinations I may be permitted to make brief reference. I have already hinted that of the many who elect to study medicine there are some who are quite unsuitable, and who would be well advised to try some other walk in life. This I admit raises a very difficult question, and it is one to which hitherto no

attention has been given, nor can it very well be discussed in a public address. I pass it by, therefore, with the observation that it is a question that deserves our attention, and I would particularly commend to the authorities the question of preliminary general education of the doctor.

Success in the profession of medicine, by which I mean the proper fulfilment of the duties of the practitioner, is attained by the exercise of certain faculties which are capable of development. Among these gifts stands out prominently the faculty of taking notice. This gift—the power to observe—is in many people, until developed by special training, entirely in suspension, but there is no endowment of which the complex mental organisation of man is composed more capable of development than this. A party of grouse shooters, when tramping through the heather between the rows of butts, made a search for white heather, and the host was the only member of the party who succeeded in gathering the white sprigs. He was invited to explain his success. "Oh," he remarked, "you know I am a manufacturer, and I have trained myself to observe flaws in certain goods when passing rapidly through the galleries." And in like manner, I maintain, may the faculty be trained in the case of the students. The training could go on pari passu with the teaching of physics, chemistry, anatomy, and physiology, in connexion with which courses the habit of observing accurately might be acquired, to be further developed in the out-patient department, wards, and post-mortem room. The opportunity to promote this kind of training will increase in the case of anatomy and physiology when these subjects are brought into closer touch with clinical work, as recommended by Keith, Berry, Vincent, Lewis, and others, the importance of whose suggestions, it is to be hoped, will be recognised and put into universal practice. These have for their aim the realisation of the vision of the prophet Ezekiel—to make the dry bones to live; the giving of a vital interest to subjects at present dead, at least in the mind of the average student; the bringing into prominence from the outset their practical utility, and thereby furnishing a living continuity between the earlier and the later subjects of the curriculum.

### DIAGNOSIS OF EARLY DISEASE.

The question of special instruction of our students in the diagnosis of early disease is intimately associated with this subject. It is recognised by all that the earlier a diagnosis is made the better for the patient, and notwithstanding this self-evident truth it is remarkable how little attention has been given to the training of students in the recognition of the earliest indications of disease. The wards are, as a rule, filled with examples of advanced disease, and the subjects selected for clinical lectures and demonstrations are usually conditions in which history and physical signs are as far as possible characteristic and strongly marked. And, of course, this is almost inevitable, for the student has but a short two years into which to crowd his clinical training, and he is naturally attracted by outstanding and obvious pathological changes in which the signs and symptoms are more or less gross and appeal to his untrained senses. It is evident that something must be done to help forward the student's training in this direction. At present, as things are, his opportunities are derived from attendance in the out-patient department of the hospital, where as a rule a large number of patients have to be seen, and the teacher is a member of the junior staff, and is not infrequently only just qualified. I have no wish to under-estimate the value of the out-patient teaching, but the diagnosis of incipient disease is at once the most difficult and the most important problem the doctor has to face, and yet it must be admitted that hitherto but little attention has been given to this phase of clinical medicine. It is generally supposed that the art of early diagnosis will be acquired later in the course of practice, but it is then too late, for in panel practice there is, I fear, contrary to the expectations of the authors of the present system, no such thing as early diagnosis. The truth is there is no time to work out an accurate diagnosis in an early case in a crowded consulting room in panel practice, and there is a danger of the aptitude becoming a lost art. For, on the one hand, the doctor has not the necessary time to devote to a careful examination, and, on the other, the tendency of the present day is to ignore physical signs and to rely altogether upon laboratory methods. I would, therefore, earnestly plead for some alteration in our system that will give due prominence to training in the methods of early diagnosis.

It is obvious that a thoroughly serviceable knowledge of the functions and structure of the human body in health and the possession of well-trained senses—the ability to observe—are essential to successful diagnosis. Nevertheless, I believe I am correct when I state that comparatively few practitioners are familiar with the range of the limits of health as signified by signs evident to the trained senses. For instance, to take but one example, failure to recognise the fact that our stethoscopes employed in the examination of chests (heart and lungs) detect the widest possible differences in normal individuals has been the source of much error in practice. The truth of this assertion was made apparent in connexion with recruiting examinations during the war, when thousands of perfectly healthy young men were graded low, or rejected altogether, on account of the erroneous interpretation of some physical sign. And, in the same way, everyday life assurance problems are settled incorrectly on similar grounds. The fact is, when we recognise that a comprehensive knowledge of the functions of man, together with the indications of their working, is necessary to enable us to detect abnormalities, it is plain that the normal state demands our very special attention, for we are dealing with what is at once the most perfect and the most faulty machine of creation.

### THE WORKING OF THE HUMAN MACHINE.

Students in future will be taught the working of this machine in such a way as will make it more easy for them to appraise at their proper value departures from the normal; and it will be the aim of the teacher to render his teaching more vivid and to demonstrate as far as possible its bearing upon clinical problems.

I am fully aware that there are objections to this attempt to abolish the line of demarcation between pure science and practical application, and that from a university point of view, on the ground that the foundations of applied science are ever extending, it would be a mistake to do anything that would tend to limit the range of the student's studies; but the patient must be our first consideration, and it cannot be denied that the practical side of the curriculum is hazardously short.

I must not conclude this dream of progress without a reference to the examination test which all students of medicine must pass before their names are inscribed upon the Official Register. For long I have questioned the wisdom of the present system, which wholly neglects to take into account the candidate's record as a student. He is known as a number, his anonymity is preserved as far as possible throughout the examination, and no notice is taken of the results of class, prize, or scholarship examinations, or of what should be the most valuable evidence of teachers of industry and capacity during his period of training; indeed, as far as I know, except in the case of one or two universities, there is no official record kept. The examination is not competitive, and the object of the examining board, composed of home or internal and external examiners, is to impose a test that will safeguard the public. But as such a test it is necessarily very imperfect, since it takes cognizance only of the present, ignores the past, and makes no attempt to anticipate the future. I welcome, therefore, the support and recommendation of the General Medical Council in this direction.

# Lumleian Lectures

ON

# SOME POINTS IN THE ÆTIOLOGY OF SKIN DISEASES.

*Delivered before the Royal College of Physicians of London on March 10th, 15th, and 17th, 1921,*

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## LECTURE III.*

### FOCAL INFECTION.

I NOW turn to what I believe to be one of the most important doctrines of modern medicine—namely, the causation of various symptoms by the absorption of toxin from one or more infected—areas in short, what is known as "focal infection." As in other medical matters, the skin offers a valuable field for the investigation of the correctness of this theory, and provides convincing instances of its correctness in some cases.

### INFECTION FROM FOCI IN THE SKIN ITSELF.

A great deal of attention has been paid to the influence of infective foci on the skin, and in most cases the focus has been sought for, and in many located, in some organ other than the skin. As far as my reading has informed me, I think perhaps the fact that the original focus may be in the skin itself has received less attention than it merits.

As an example of what I mean I may instance ordinary pediculosis capitis. As a result of the invasion of the scalp by pediculi it is of course frequently the case that an attack of impetigo contagiosa develops as a secondary infection. In most cases nothing more occurs, but in a certain proportion a further train of symptoms may be observed.

The first sign to be added to those of the simple impetiginous lesion is the eruption of extremely fine miliary papules situated at the orifices of the hair follicles of the sides and back of the neck extending down nearly to the clavicles. These papules appear to be produced by the erection of the hair follicles and are at first only slightly if at all reddened. They may remain in this stage until they subside or they may redden and even become covered with minute vesicles, though this is uncommon. They resemble closely, except as to situation, the papules of lichen scrofulosorum. In some cases the secondary eruption is limited to this, but in others there occurs, after a variable number of days, an acute outbreak all over the chest, abdomen, and shoulders of an annular or figurate erythematous eruption with secondary scaling, such as would be classed in the ordinary way as a circinate seborrhœic eczema of the trunk.

If the pediculosis and impetigo of the scalp be efficiently treated and the trunk left alone, the whole of the eruption disappears speedily. In such cases I think the generalised eruption may be fairly assumed to be due to the absorption of toxin from the streptococcal infection of the scalp. A similar train of symptoms may develop in scabies, and frequently does so, but owing to the widespread diffusion of the primary disease, the separation of the primary and secondary eruption is much more difficult and less convincing.

I remember many years ago being fairly trapped by the secondary toxic eruption in two cases. This occurred when the seborrhœic eczema of Unna was in the height of fashion, and many of us were on the look-out for instances of definite contagion.

Two brothers attended my out-patient department showing very fine examples of "seborrhœic eczema" on the trunk and limbs. The history was that one had first developed it on the chest and then the second had begun to come out in a similar eruption a fortnight later. Being somewhat under the influence of the parasitic-contagious theory of seborrhœic eczema, I regarded these cases as good examples of its contagious nature. Later in the same afternoon I saw a girl suffering from ordinary typical scabies without any secondary eruption of note. She volunteered the fact that I had just seen her two brothers, and as they had not left the hospital I fetched them back and was somewhat crestfallen to find that their contagious disease was common itch!

It is also not uncommon to see in patients with a patch of so-called varicose eczema, i.e., pyogenic dermatitis, on the leg, the development of an acute outbreak on the arms and trunk of a papulo-vesicular eczema which will readily disappear if the original patch be brought under control. I regard all these as instances of intoxication from focal infection, but I confess that I am not certain as to how far they may be due to bacterial poisoning and how far to the absorption of the patient's own tissue products, to which I have already referred in the cases of extensive ecchymosis. Unfortunately, with the methods of investigation at present in our hands, I see no way of separating these two factors.

In this connexion I may draw attention to a recent paper by Prof. Bruno Bloch[19] of Zurich, who has for many years been studying the constitutional effects of trichophytic invasion of the skin. Prof. Bloch points out that this effect varies with the depth of the inflammation caused by the fungus. The ectothrix class is that which gives rise to the greatest degree of constitutional disturbance; the actual toxin present is not specific for one variety of fungus, but is common to all the trichophytons, the microsporons and the favus fungi, the achorions. He therefore proposes for this common toxin the name of "mycine." Resulting from the absorption of this toxin, either naturally in the course of the disease, or from an experimental and therapeutic injection of vaccine prepared from cultures of the fungi, he and others have observed eruptions on distant parts of the body. A number of observations by different investigators now exist in which the appearance has been noted of an eruption closely resembling that of lichen scrofulosorum. Cases have also been observed in which the eruption has been squamous in character, resembling that of "seborrhœic eczema."

It is interesting to compare this with what I have just described in connexion with streptococcic impetigo. Also, seven cases in all have been collected by different observers in which apparent characteristic erythema nodosum has appeared as the result of deep trichophytic infection, and, lastly, scarlatiniform erythema and erythema exsudativum multiforme have been seen.

The type of eczematous eruption which is, in my opinion, most typically the result of focal infection is that which I term for convenience "flexural eczema." In this case the eruption has its main seats in the axillæ, the groins, the umbilicus, the submammary regions in women, the flexures of the knees and elbows, and the base of the neck. In most of my cases the focus has not been situated in the skin itself, but it may be.

A middle-aged lady consulted me for a widespread and severe eczematous eruption with the above distribution. On inquiry I found that she had scratched her neck with a pin or the metal support of a collar, and the small wound had festered, and about ten days later the generalised eruption broke out and deprived her of rest at night. The whole of the eruption yielded at once when the original pyogenic patch was efficiently treated, and for the subsequent several months during which I heard of her showed no tendency to recur.

As I have already said, I do not find that the focus of infection is nearly always in the skin itself. On the contrary, I think it is more often elsewhere. The gums, teeth, tonsils, and accessory sinuses of the nose are frequent offenders, less frequently in my experience the uterus, bladder, and urethra.

### ORAL SEPSIS.

Dealing first with the gums and teeth, I have notes of very many cases of the most diverse eruptions which I consider to be proved to be due to chronic

* Lectures I. and II. appeared in THE LANCET of July 9th and 16th, respectively.

infective periodontitis. In every case I have tried to survey the position critically before assuming the direct connexion. Oral sepsis is so common and the evil effects ascribed to it so multifarious that one naturally acquires a feeling of mistrust, especially since one so frequently sees terrible mouths associated with otherwise apparently faultless health. Also I have a vivid memory of one lady who was treated from June to October for what was obvious scabies by the inoculation of a vaccine made from her suspected gums.

The postulates that I have laid down for myself have therefore been the following: (1) that the skin disease shall be either chronic or frequently recurring; (2) that after a thorough examination no other cause shall be found; (3) that the usual methods of treatment shall be found unavailing; (4) that appropriate treatment of the teeth and gums shall be followed by cure or at least marked improvement.

The cases which have complied with these tests have belonged either to the group containing purpura, erythema multiforme, and lupus erythematosus, or have been forms of eczematous dermatitis. As regards the latter I believe Dr. Barber considers that a certain type of eczematous dermatitis of the arms showing large, chronic, and well-defined patches is characteristic of chronic infective periodontitis.

The first case in which my attention was drawn to the possible connexion between disease of the skin and that of the gums occurred in my practice 13 years ago.

This was the case of a lady who suffered from lupus erythematosus in small indolent patches on the face. She was under my care for the face, and under Mr. J. G. Turner for pyorrhœa. The patches yielded rather satisfactorily to local treatment, but fresh ones continually appeared. It was then noticed that fresh exacerbations invariably occurred about two days after local treatment had been applied to the teeth. Unfortunately I had no opportunity of observing the final result of the treatment of the teeth, as I lost sight of the patient.

Since then I have seen a fair number of such cases, and some at least have got well in a comparatively short time after wholesale extraction has been performed.

As regards the erythema multiforme group the following is a typical case.

A gentleman aged 70 years consulted me for a nodular erythema, somewhat resembling chilblains, on the hands. The duration of the eruption was two years, and although it had varied in severity the hands had never been clear during this period. After examining him carefully I found what I thought was pyorrhœa of several teeth, although he told me that his dentist had assured him that his mouth was clear. I ordered him quinine in high doses, and suggested that he should obtain a further dental opinion and if necessary submit to extraction of the unhealthy teeth. A month later I heard from him that the quinine had apparently caused the entire disappearance of the eruption in ten days, but that it had returned, was not further controlled by the quinine, and he was therefore going to take my advice about his teeth. I did not see him again, but was told by the dental surgeon whom he had consulted that many tooth sockets were heavily infected, and that after numerous extractions the erythema had entirely disappeared. I therefore wrote to the patient later on asking him whether he was in reality quite well, and whether he was confident that his recovery was entirely due to the dental treatment. I received a somewhat enthusiastic reply stating that he had entirely recovered, but that at first he had been somewhat depressed as the early result of treatment was to make his hands distinctly worse, and that an indurated lump had appeared in the muscle of the right shoulder. All these symptoms had, however, slowly disappeared, and at the time of writing he was quite clear and had been so for a considerable period.

Many years ago there was a considerable discussion as to the nature of the disease described by Bazin under the name of erythema induratum scrofulosorum. Bazin's description was applied to the nodes that occurred in the legs of young girls whose occupation involved prolonged standing. The nodes frequently softened and led to obstinate ulceration. The question of the ætiology of this form has been, I think, answered by inoculation experiments and tuberculin injections, and the disease has been proved to be tubercular in nature. Later on, however, I described some cases which occurred in middle-aged rather than young women, in patients who suffered from dyspepsia, "rheumatism," and varicose veins. I pointed out that the nodes in these cases were much more painful; that they seldom, if ever, produced ulcers; that they disappeared fairly quickly with rest in bed; that the patients gave no tuberculin reaction; that inoculation experiments gave negative results; and that the histology differed in some degree from that of the nodes in Bazin's disease. At the time I offered no theory as to their ætiology beyond attaching them to the group of the obscure "chronic rheumatic" type. Looking back on my cases, I remember that they all had bad teeth, and I incline to the view that these should be put into the group of infiltrative erythematous lesions due to focal infections.

An American author, E. D. Chipman[20] has claimed that lichen planus is often associated with and is probably caused by abscesses at the apices of the teeth, but this I have been unable to corroborate. I have seen a goodly number of cases of lichen planus in which careful radiographic examination has failed to reveal any evidence of disease of the sockets, and also I have seen cases in which the eruption has appeared in patients who have been completely edentulous for several years.

Recently Dr. Barber[21] has published a paper in which he urges the claims of alopecia areata to be due to focal sepsis, in some cases pyorrhœa, but more frequently septic tonsils. It is many years now since Jacquet announced his theory that this disease was due to decaying or erupting teeth, a theory difficult to confirm or combat, but one in favour of which I have seen some evidence. Jacquet's idea was, I think, to attribute the disease rather to nerve irritation than to bacterial intoxication, and the series of cases that I published in which alopecia areata of middle age, associated with headache, responded to correction of errors of refraction after resisting other treatment seems to fall into line with Jacquet's theory of nerve irritation.

### DENTAL IRRITATION.

Before leaving this question of the teeth there is another group of cases to which I should like to refer, though I do not think these belong to the infective group. The first is the occurrence of a persistent erythematous patch on one cheek and found in children only. The eruption is not common, but I have now seen a considerable number of cases. There is no disturbance of the texture or consistency of the skin, but merely the presence of an ill-defined, circular patch varying in diameter from half an inch to an inch, and of a bright red colour. These patches have proved, in my experience, resistant to treatment, have lasted several months and eventually disappeared without leaving any trace. Most of the patients in whom I have seen the eruptions have been cutting their permanent teeth, and I am inclined to think that it is the canines and first molars that are most often associated with it. Another eruption, possibly allied to this but more acute, is the so-called herpes of the cheek, which is almost limited to children. Herpes febrilis of the lips, nose, and chin is, of course, commonly associated with colds, pneumonia, gastritis, and other acute disorders, but the peculiar discoid group of vesicles in the neighbourhood of the zygomatic process is, as far as my experience goes, limited to children during the second dentition, and I have seen these patches relapse just before the eruption of the permanent molars time after time.

### TONSILLAR INFECTION.

The tonsils are naturally regarded by the believers in focal infection as a fruitful cause of skin eruptions. Dr. Barber, I believe, holds the view that lupus erythematosus is definitely due to a chronic streptococcic poisoning most frequently derived from the tonsils or teeth. Without being quite so precise as this, I may say that after many years of investigation I have no doubt that he is right in some cases. One of the difficulties of assessing the amount of skin

disease to be attributed to disease of the tonsils appears to me due to the absence of any very definite clinical appearance of the tonsils in some cases.

To the recent publication by Dr. Barber on the association of infection of the tonsil with alopecia areata, Mr. Zamora has appended a short article on the signs of tonsillar infection. I confess that this article left me with a sense of depression, as it seemed to me that almost the only certain way of diagnosing tonsillar infection was to enucleate the organ and examine the deeper parts bacteriologically. Nevertheless, short of this there are, of course, many cases in which examination carried out with a high degree of skill will reveal perfectly certain disease.

The types of disease that I have chiefly seen associated with tonsillar infection are lupus erythematosus and "flexural eczema." In carrying out my investigations I have differed slightly from Dr. Barber, who has, I think, generally had a streptococcic vaccine prepared from the tonsil and used it at once. I have preferred, after the enucleation of the tonsil and the preparation of the vaccine, to wait and observe the change that takes place from the mere abolition of the infective focus before using the vaccine. I have done this in order to avoid being misled by the improvement which follows in so many diseases after the injection of a non-specific vaccine, and is termed "protein shock."

My experience has led me to be confident of the direct effect of infected tonsils, with or without adenoids, in the production of certain cases of eczema and lupus erythematosus.

A child aged two was brought to me with a severe eczema of the "flexural" type. The family history was about as bad as it could be, asthma and eczema occurring very frequently on one side and eczema on the other. The child herself was liable to an irritable cough and was suspected of being in the early stages of asthma. The eczema came on in severe attacks, but did not clear up entirely in the periods of quiescence. The highly intelligent nurse told me in the course of my examination that the attacks of eczema were invariably preceded by a period of four or five days during which the child snored loudly at night and had difficulty in breathing during the day. On examination of the throat it was found that the tonsils met in the middle and appeared to be as large as walnuts. I advised enucleation and this was done in my presence, a large patch of adenoids being removed at the same time. I secured a culture of streptococcus pyogenes from the depth of the tonsils and prepared a vaccine in case of need, though as a matter of fact it was never used. The only local treatment given was lotio nigra, yet the eczema all disappeared within a few weeks, and the cough and difficulty of breathing ceased. Two years later I heard that she was still well, though her skin remained a little more sensitive to climatic variations than that of most children.

Before the operation this child had had very expert local treatment, and a course of inoculations with organisms cultivated from the skin. No benefit had resulted from these forms of treatment, and scarcely any local measures were necessary after the pharynx was cleared. It will be noted that the patient was very young, and the disease had consequently not been running for a very long time. I believe this to be important, and that if the patient is left with the focus until adult life cure will be problematical, though improvement seems almost always to occur.

I have now under observation from time to time a girl of about 20 who has suffered for very many years from an eruption which is, I think, identical with what the French call "prurigo à papules grosses." The eruption comes up as lenticular papules, almost entirely confined to the arms and legs, most profuse on the forearms and below the knees. These papules are maddeningly irritable, and she only obtains relief by decapitating them with her nails. The skin of the affected region is, in consequence, somewhat pitted and very harsh. When she consulted me I advised that her large and very foul tonsils should be removed, more especially as there was a history of repeated tonsillitis. This was done in King's College Hospital, and she had two years of complete immunity from her trouble. She then came again with a milder attack of the same thing. I found on inquiry that she had had several infected teeth removed and the relapse occurred soon afterwards. I hazarded the guess that if the mouth were put into thorough order the relapse would die away again, and this has occurred almost entirely; but any little illness such as a severe cold or gastric upset will cause a slight and temporary return of the old trouble. My idea is that the many years of intoxication of the skin have so weakened its resistance that it will be only after a very long time, if at all, that it can return completely to the normal.

As regards the connexion of lupus erythematosus with infected tonsils, the following appears to me to be a convincing case.

A girl aged 17 was brought to me for several patches of lupus erythematosus of the congestive type, with some scaling and atrophy. There was present in addition to the lupus erythematosus some septic dermatitis of the nares. The history showed that her father had died of tuberculosis of the lungs and larynx, a fact that caused me to be very suspicious that the girl herself might be suffering from latent tuberculosis. The tonsils had been guillotined, but not enucleated, in childhood, and showed to my eye nothing abnormal. The dermatitis of the nares led me to suspect trouble within the nose, and she was therefore taken to a first-class rhinologist, who reported nothing wrong within the nose or in the pharynx. She was then thoroughly examined by an expert physician with a view to finding or excluding tubercle. He reported that she was free from evidence of active tubercle, but said that there was pus in one tonsil. The tonsils were accordingly enucleated, nearly a drachm of pus being found in one of them, and from this pus a vaccine of streptococcus pyogenes was made, though never used. In two months' time the lupus erythematosus had disappeared, and she remained clear for nine months. At the end of this time she contracted measles, and a little while after this a mild return of the eruption occurred, which I am hoping will disappear spontaneously.

The influence of acute specific fevers on lupus erythematosus is familiar to me, and I remember well one man who had so slight a lesion on his nose that I could only make a tentative diagnosis. I was taken, however, later to see this patient while suffering from enteric fever, and found that the effect of this was to bring out a widespread attack of lupus erythematosus over the nose, both cheeks, and ears. This subsided after his convalescence from the enteric fever.

This effect of acute illnesses on lupus erythematosus is, I think, also interesting because it is the converse of what is generally observed in eczema and sometimes in psoriasis. Certainly, in the former an acute febrile illness is generally accompanied by an amelioration in, if not the disappearance of, the eczema. So much so is this the case that it is well known to the lay public, and they carry it further and state that while they have the eczema they do not suffer from other troubles, and when their eczema is in abeyance joint pains and general malaise occur.

As to the right position of cause and effect in this I do not wish to be dogmatic, but from careful observation I am inclined to think in most instances the illness is the cause of the fading of the eruption and that the fading of the eruption is not the cause of the illness. Others, among whom may be mentioned Dr. Brocq of Paris, hold the opposite view, and consider it dangerous in some cases to cure a widespread eczema too rapidly.

With regard to this view I am in complete agreement with Sir Malcolm Morris in finding myself unable "to calm down abruptly" cases of furious eczema. In fact it is only in those instances where I have been able to detect more or less accurately the causal agency and to remove it that any of my cases of severe eczema have got well abruptly.

### NEUROSIS AND SKIN DISEASE.

The last ætiological factor to which I shall allude is the influence of the nervous system on skin diseases. This is a matter of such intense difficulty that I approach it with considerable misgiving. I think there is no doubt that in many instances the prejudices of the observer have led to the drawing of unjustifiable conclusions, and that slipshod clinical examination has resulted in the attributing of eruptions to the nervous system when they are plainly due to another cause. On more than one occasion I have seen that much mistaken disease, scabies, attributed to nervous shock.

The frequently mistaken attribution of skin disease to obscure defects of the brain summed up a

"nervousness" has, perhaps, led the specialist in some cases to underestimate the influence of psychical states on the skin. I think, however, that one should approach this subject with critical reserve, and only after very careful examination of the evidence put down a dermatosis to psychical influence.

The dermatological world is very familiar with a series of eruptions, chiefly wheals, bullæ, abrasions, and ulcers, which have been described on the continent as due to the direct trophic action of a psychic influence. These diseases are not recognised in this country because in every case, as far as my knowledge goes, in which an apparent instance has been encountered careful observation and investigation have established the fact that although no doubt a psychic influence has been at work, the actual eruption has been produced by the self-infliction of injury, and the cases are therefore classified here under the heading of "feigned eruptions." In some of these cases the eruption has been produced deliberately, and during the late war a new, or at least an unfamiliar, dermatosis of a pustular nature appeared in unwilling conscripts, and I have heard that there was an establishment somewhere in London where one could take lessons in the art of its production. Certainly I was deceived by the first case I saw and put it down to the effect of sweating in a coarse woollen shirt and the carrying of a pack. Later on I became familiar with it, as did many of my colleagues in the specialty.

In other cases I am pretty confident that patients produce the eruption in a state of mind that I believe would be classed under the heading of dissociation, and are not aware of their own behaviour. Dr. Pernet advanced this view of double personality some time ago. Putting these locally produced eruptions aside, there undoubtedly remain others, though the mechanism of their production is obscure.

To begin with, we may note that in female patients there is an eruption called erythema pudicitiæ which is clearly nervous in origin. On exposing the trunk of the patient a lenticular erythema is seen on the chest and shoulders, and this fades gradually away. It is not due to change of temperature, as it is often seen immediately the dress is undone and before the chilling has come into action. The eruption is quite common, and its only interest, as far as I am concerned, lies in the fact that it is produced by a psychic influence. If congestive erythema may be thus produced it seems not unlikely that a more serious eruption may also result if the psychic disturbance be more pronounced or prolonged.

It is not so very uncommon for very nervous patients to suffer from so-called "dead finger," and to state that this condition may be brought on by their being startled.

Within the last few years I have had such a patient in my room, and while questioning her I contrived to upset a heavy tray of notes on to the floor so as to make a sudden and considerable noise. In a short time three of her fingers, two on the left hand and one on the right slowly became ivory white. More prolonged circulatory disturbances might, I think, lead to persistent affection of the skin, and I have, I believe, instances of the kind. One was the case of a lady who was not at all well off, whose sons in turn as they grew older competed for scholarships which meant a great deal to her. As the critical time approached she had attacks of weeping eczema on the fingers, and these subsided after the results were known. I saw her during one of the attacks and was unable to do more than palliate it until the period of suspense was over.

Another patient, also a lady, lived in a town over which hostile aeroplanes were frequently passing during the war. She was very stouthearted, and as her husband was obliged to live there she refused to leave. At first all went well, but after a time bouts of nocturnal firing by our guns and the dropping of bombs by hostile aeroplanes were followed by an acute outbreak of vesicular eczema on the face and hands. Later still if her baby cried in the night she woke startled and the eczema soon reappeared. I then persuaded her to leave and go inland, where the whole trouble disappeared in a short time.

It must, I think, be in the common knowledge of all of us that alopecia areata was much more frequent during the war, and not only in those in the army. To so great an extent was this the case that a witty colleague christened it "alopecia airraider." This is to me a matter of interest, as I have always held the trophoneurotic theory of this disease, and this fact seems to me to be difficult to reconcile with Dr. Barber's theory that alopecia areata is due to septic absorption from gums or tonsils.

Dr. Vigulo-Lutati[22] has also published a series of cases of somewhat similar nature in the Italian army.

The hair of an artillery captain, 24 years of age, turned almost completely white during the two days of the battle on the Piave. A young lieutenant had barely escaped being taken prisoner by the enemy and part of the hair on one side turned white in a day or two. In another case a railroad man of 38, after a bombardment of his train, had all the hair of his head, eyebrows, and beard drop out. As it grew again it came in white, but by the end of eight months the eyebrows and beard had returned to the former chestnut colour, while the scalp hair still remained white. Another soldier noticed a long patch of white hairs on the side of his head the morning after a battle. This white strip was still obvious eight months later when Lutati first saw him.

Other cases of premature blanching have been observed. Cases of this kind seem to suggest a direct psychic influence on the skin, but I am of opinion that it is not infrequent for the mental condition to act indirectly on the skin.

One cannot deal with large numbers of patients suffering from those skin diseases such as urticaria, dermatitis herpetiformis, eczema, and psoriasis, in which, at all events, up to the present no one specific cause is known, without being struck by the frequency with which one gets a history of mental shock or overstrain. Of course, one must be on one's guard against the too ready acceptance of the patient's story, as in the case mentioned earlier in these lectures in which an eczema ascribed by the patient to worry and overwork proved on investigation to be due to the poison of *Rhus toxicodendron*, but after one has used the utmost care there remains a number of cases which, at all events, get better or worse according to the mental condition of the patient.

We are all, I suppose, familiar with the great influence of the mental condition over the state of the digestive functions, including both secretion and motility, and I venture to think that it is through these vital processes that the mental condition sometimes acts indirectly. As a further instance of the relationship between the central nervous system and the skin I may mention lichen planus. For very many years there have been numerous expert dermatologists, among others the late Dr. Colcott Fox, who were convinced that there was a close relationship between lichen planus and the nervous system. This idea owed its origin, I think, to the frequency with which this disease was associated with a history of sudden shock or prolonged nerve strain. No further convincing evidence was obtained for some time.

Then Drs. Thibierge and Ravaut [23] drew off some of the cerebro-spinal fluid by means of lumbar puncture. Nothing abnormal was found in the pressure or the constitution of the fluid, but the eruption was very favourably influenced by the procedure. This operation has been repeated by several observers, and in one case Dr. Pernet [24] obtained a fluid which did not reduce Fehling's solution. My own experience of this method has been almost entirely favourable. The worst case that I have treated had a nearly universal eruption which was so intensely irritable that she had been almost sleepless for three weeks. Relief from the itching and consequent return of sleep were secured within 48 hours, and the eruption began to flatten in a few days. Fourteen days after the removal of about 8 c.cm. of cerebro-spinal fluid she left the hospital in good health, and with only a widespread brown pigmentation to mark the distribution of her previous eruption. I am of opinion that in this case the procedure saved her reason, if not her life.

In all cases so treated by me the effect on the subjective symptoms has been dramatic, and in all but two the eruption has lost its infiltrative character soon after the withdrawal. In one of these two

I repeated the procedure with improvement. It is not clear in what way the beneficial effect is produced since, as already stated, there does not seem to be any notable abnormality present either in the pressure or quality of the fluid, but it would seem to indicate some obscure relationship between lichen planus and the central nervous system.

These are the chief diseases that I have observed in relationship to the psychical state of the nervous system, and in the case of lichen planus there seems to be some relationship to the organic side although it is obscure. There are, of course, many other diseases, such as glossy skin, herpes zoster, and probably erythromelalgia which are connected with inflammatory disease of the peripheral nerves and ganglia. With these I do not propose to deal. There is, however, another group to which I should like shortly to refer.

### REFLEX IRRITATION.

In 1897 Dr. Pernet [25] published a case of relapsing herpes zoster of the right side, once on the body and three times on the neck and head. In this case he suggested ocular strain as a possible cause, and the oculist to whom he sent her found hypermetropic astigmatism. In 1903 Dr. Pernet referred to this case again and reported that she had remained free since the eyes had been corrected. It is noteworthy that in this report Dr. Pernet stated that he thought some cases of alopecia areata might turn out to be associated with eyestrain. In 1902, a year previous to Dr. Pernet's second communication, Jacquet [26] published a couple of long articles on alopecia areata, and claimed that a great number of cases in children were associated with dental irritation and were produced reflexly. Curiously enough he noted that enlarged tonsils and adenitis of the neck were also frequently met with, thereby anticipating Dr. Barber, though I think he implied that the tonsils acted rather by nerve irritation than as sources of septic intoxication.

This theory of reflex irritation set us all to work to make control observations. Most observers express great doubt as to the validity of the theory, but I myself, though uncertain, have thought that there was some evidence in its favour, as I have already stated in an earlier part of these lectures. In 1904 [27] I published a series of cases of alopecia areata associated very definitely with eyestrain and headache. My cases had been extremely resistant to treatment by well-known experts before they came to me. With the exception of the prescribing of glasses no treatment was given and the results were in all cases striking. At the time I thought I had hit on the cause of the disease, but I soon found out that these cases were quite uncommon. In only one case with this ætiology was the age below 20, and in nearly all the patients were in the neighbourhood of 40. In every case where the relationship was apparently established by the resulting cure on correction of the error of refraction, headache was a marked symptom. Since that time I have seen a fair number of cases in which I think that the wearing of glasses and the rapid recovery of the hair has offered good evidence of this relationship, but as I have said it is certainly not the commonest cause, and I am not certain that it accounts for any of the juvenile cases—i.e., those between 7 and 12.

I may conclude these remarks with an apology for the somewhat discursive and unsystematic treatment of my subject. Some points, however, there are that I have endeavoured to bring out in these lectures:—

First, that a careful examination of the clinical signs on the skin is a necessary prelude to the forming of a correct opinion as to the ætiology of the eruption, since without this wild theories will be substituted for real knowledge.

Secondly, that in some of the recent work our attention has been directed to a greater extent towards the working out of the whole physical condition of the patient, and dermatology has therefore been brought into a closer relationship with general medicine.

To these I may add a third—namely, that this deeper insight which we have begun to gain into the true ætiology of disease as it affects the skin has been already in many cases the means of securing a greater efficiency in the treatment of our patients.

Finally, I should like to thank those of my colleagues in the specialty who have afforded me a frank discussion of ætiological difficulties, and especially would I express my gratitude to Dr. G. A. Harrison, lecturer on biochemistry at King's College Hospital, for much valuable help.

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## A CASE OF
## PRIMARY TUMOUR OF THE PLEURA.

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PRIMARY tumours of the pleura are interesting by reason of their rarity and difficulty of diagnosis. The case here described has been thought worth recording in that the evidence of its primary nature is clearer than in many recorded cases, the patient dying at a comparatively early stage, before metastases in other organs had formed.

*History.*

J. H. C., a well-developed, well-nourished man, was admitted to the Royal Southern Hospital under Dr. C. J. MacAlister on Jan. 29th, 1921. He gave his age as 38 years. He said that for about five weeks he had been feeling "out of sorts," had a slight cough, and suffered from shortness of breath; the breathlessness had gradually increased until he was unable to go about his work (publican), and was compelled to sit in a chair all day. He had no pain in any part of his body, but for a fortnight he had been aware of a tender spot on his breast bone.

On admission patient had a temperature of 98·4° F.; pulse 104 per minute, respiration 28 per minute; slightly cyanosed. Veins in neck dilated and prominent, but not pulsating. He had a slight cough, amounting to little more than "clearing his throat," and his voice was hoarse, but he said it had always been so. There was a prominence on the chest just below the angle of the sternum, and at the left side of this prominence, at the junction of the third costal cartilage with the sternum, there was a point of great tenderness. The surrounding area was not tender. The other signs were those of a large right-sided thoracic effusion—dulness on percussion over the whole of the right side of the chest and extending in front across to the left border of the sternum above the area of cardiac dullness; no Grocco's triangle; vocal fremitus absent on the right side; breath sounds absent anteriorly but present posteriorly, bronchial in type, and weak; vocal resonance much less on the right side than on the left. The apex beat was displaced outwards, being situated 2 inches outside the nipple line and in the sixth interspace; heart sounds normal. There was no other visible or palpable pulsation in the chest. Measurement showed that the two sides of the chest were equal. The lower border of the liver could be felt 2 inches below the right costal margin in the nipple line; the organ was of normal consistence, smooth, and not tender; the abdomen was otherwise normal. The pulse was small, soft, regular, and equal in the two wrists; the vessel wall was not palpable. The urine was normal—sp. gr. 1020 acid, no albumin or sugar. No enlarged glands were to be made out anywhere in the body. The pupils were equal and reacted to light and accommodation.

*Progress.*

As there were all the clinical signs of fluid in the right side of the chest and patient was in need of early relief, a

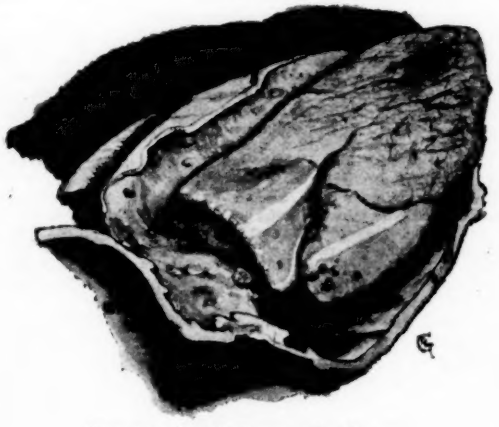
needle was inserted at once, and 21 ounces of clear straw-coloured fluid were aspirated off (needle then got blocked). The next day there was a slight hyper-resonance above the third rib on the right side, but the cardiac apex beat remained in exactly the same position as before, and patient did not seem much relieved. On Jan. 31st patient was X rayed to see whether there was any aneurysm, but nothing suggestive of that condition appeared on the plate. On Feb. 3rd the right side of the chest was again dull up to the clavicle, and 36 ounces of the same light yellow fluid were withdrawn. Still the apex beat remained in the same position. A blood test of this date showed that the Wassermann reaction was negative. Patient was aspirated again on Feb. 10th and 13th, and on the latter occasion the fluid withdrawn was blood stained. The diagnosis was now put forward that a growth was pressing on the superior vena cava and coming towards the surface at the left border of the sternum, thus fixing the mediastinum and therefore the apex beat, but it was not suspected that the site of the growth was in the pleura. After this an attempt was made to allow the fluid to drain away continuously by inserting a Southey's tube in the axilla and afterwards in the back, but the tube did not tap the fluid unless it was held firmly pushed in up to the guard, and it was found impossible to keep it in this position.

Between Jan. 29th and Feb. 18th 209 ounces of fluid had been withdrawn altogether, and the right pleural cavity was still three-quarters full, and the position of the apex beat unchanged. The tender spot was still present at the border of the sternum. The general condition of the patient had not altered, except that he had become weaker; his temperature ranged between 98° and 99° F.; pulse 104 to 120; respiration rate 28 to 38 per minute. A swelling of firm consistence, apparently due to distortion of the thoracic wall, had gradually developed on the right side just below the angle of the scapula; the ribs seemed to have come closer together at this place, so that it was hard to insert a trocar between them.

Aspiration was repeated on Feb. 22nd and 25th, and March 5th, as much as 70 ounces of deeply blood-stained fluid being withdrawn on the last two occasions, and then the aspiration was stopped, each time because patient began to cough. From the beginning of March the lower lobe of the left lung began to be œdematous, and patient became more breathless and often delirious. He began to complain of pain along the right costal margin and in the right side of the abdomen, and the skin was hyperæsthetic in the same area; this was thought to be due to pressure on intercostal nerves in the swelling posteriorly.

He died suddenly on the morning of March 12th, six weeks from the date of his admission and 11 weeks from the onset of symptoms.

FIG. 1.



Drawing of posterior aspect of tumour.

### *Post-mortem Findings.*

The autopsy was performed 18 hours after death. P.M. lividity and rigidity normal; body fairly well nourished. A small tumour was felt on anterior thoracic wall, not attached to skin, at the level of the fourth intercostal space, just internal to right nipple line. On opening thorax a growth was found which took the form of a massive nodular thickening of the parietal pleura lining the whole of the ribs, costal cartilages, sternum, and diaphragm on the right side, and which to some extent had spread on to the visceral pleura at the root and base of right lung. The nodules varied in size from that of a pea to a hazel nut, the larger being umbilicated. The greatest thickness of growth, amounting to about ¾ inch, was in the region of the angles of the eighth to eleventh ribs.

The space between lung and tumour contained about two quarts of blood-stained fluid. There were no bands or adhesions. The right lung was collapsed and fibrous, and except at the base and root was covered with thickened pleura which was apparently inflammatory and not new growth. At its base the lung had been superficially infiltrated with growth, which formed a nodular layer about ¼ inch to ½ inch thick. The growth had extended between the fourth and fifth ribs on the right side to form a subcutaneous swelling above noted, but had not infiltrated the bone or

FIG. 2.

High-power drawing to illustrate type of cell; magnification, 600.

cartilage. The left pleura and lung were normal, except for a few superficial scattered nodules of growth on the visceral pleura and a slight degree of emphysema of the lung. The mediastinal glands were somewhat enlarged, and were found to be heavily infiltrated with growth.

The parietal pericardium at its upper end was invaded with nodules, which had not extended to the visceral layer, but were of sufficient bulk to cause compression of the superior vena cava and the coronary veins, the latter being dilated and somewhat varicose. The heart itself was normal, except for its position, which was well to the left of normal. The trachea and bronchi were opened up as far as possible, but no growth was found, and the œsophagus was normal. The peritoneum showed no evidence of growth. The liver was large (88 ounces) and pale, showing slight chronic venous congestion, and was displaced downwards, the lower margin being 3 inches below costal margin. All other organs were normal except for slight congestion, and showed no primary or secondary tumour formation. The mesenteric glands in the region of the solar plexus were somewhat enlarged.

### *Microscopic Appearances.*

Histologically the tumour consisted of a fibrous tissue stroma in which were seen epithelial-like cells of rather polymorphous appearance, varying according to their situation from round, flat cells, indistinguishable from squamous epithelium, to pear-shaped or spindle-shaped forms. Some of these cells appeared to be branched, and on staining with Van Gieson in some places the "tails" seemed to be continuous with the fibrils of the stroma. The nuclei were rounded and uniformly rich in chromatin, but mitotic figures were rare. The cells were grouped in columns or clumps, but no definite alveolar arrangement could be made out. The very few blood-vessels seen were mostly well formed. In sections through the main growth (i.e., from upper surface of diaphragm) the cells were more spindle-shaped, and the fibrous stroma more abundant, whereas in some of the superficial alveoli of the base of the lung and in the mediastinal lymphatic glands masses of tumour cells with little or no stroma were found, and the cells were much more spherical.

### *Remarks on the Case.*

The true nature of these tumours of the pleura has been the subject of much controversy, as is seen by the variety of names given to them—e.g., endothelial cancer, sarco-carcinoma, alveolar endothelial sarcoma, mesothelioma, and so on.

The great difficulty in naming a tumour endothelioma is to demonstrate its origin from endothelium, and it is practically impossible, as Du Bray and Rosson[1] point out, to eliminate the supposition that they are carcinomata originating from the lung tpithelium, either alveolar or bronchial, as the eumours are never seen when confined purely to pleura and without having extended to some degree into the lung substance. Writers on histology [2] classify endothelium generally as pavement epithelium of mesoblastic origin, and there does not seem to be any satisfactory method of distinguishing this mesoblastic epithelium from the true epi- or hypoblastic type. Miller and Wynn [3] describe a case of endothelioma of the peritoneum in which, using Van Gieson stain, they demonstrate an apparent connexion between the processes of the epithelial-like cells and the fibrils of the stroma, and suggest that this points to a connective tissue origin. Adler [4] thinks they originate from the lining endothelium of the pleura, while Schultz and Eppinger believe that these tumours usually originate in the endothelium of the lymphatic vessels. Bloch [5] collected 63 cases, which he divided into two groups, the larger (47 cases) being endotheliomata, which he considers had origin in the endothelial lining of the pleura, and the smaller (16 cases) being spindle-celled sarcomata from the subjacent connective tissue. Adami [6] calls these tumours mesotheliomata, grouping them with epitheliomata as lining membrane growths, in this case of mesoblastic origin.

In the case described above the uniform growth—almost entirely confined to the pleura, with only slight and superficial involvement of the lung, and the general histological appearance—seem to indicate the endothelial lining cells of the pleura as the primary source, and so, adopting Adami's nomenclature, it would be called a mesothelioma. The general characteristics in this case correspond with most of those recorded, but it seems to be at a rather earlier stage. The age of incidence (Patterson [7]) is said to be usually between 40 and 60; the tumours are slightly more common in males than females, and are more often right-sided. They are frequently associated with profuse blood-stained exudate, although many cases are described in which the pleural cavity is completely obliterated with growth. Extension is usually by direct infiltration rather than by the blood stream.

We are much indebted to Dr. MacAlister for his help and for permission to publish this case, and to Mr. R. Gick for the drawing (Fig. 1) reproduced here.

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## A CASE OF CURE OF DETACHMENT OF RETINA.

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MY reasons for publishing a single case in which the complete disappearance of a detachment of the retina has followed a definite line of treatment are, on the one hand, that it is a condition in which almost entire loss of useful sight eventuates in all but a few cases, and, on the other hand, the great variety of forms of treatment advocated, is sufficient testimony to the unsatisfactory nature of the results obtained. My own experience of any form of operative treatment which has for its object the evacuation of the subretinal fluid has been uniformly discouraging; and many cases are made worse by the procedure. I believe it is the general experience of ophthalmic surgeons, that when a patient has been confined to bed for a month—a course which is generally insisted on as auxiliary to any form of treatment—he usually says his sight is improved, although no alteration in the objective signs is detected, the detachment being as large as before.

There is one form of detachment from which recovery is almost invariable, and another which I believe to be so entirely hopeless that an attempt at treatment is not worth while. The former is that occurring as a complication of renal retinitis. In this condition, if extensive retinal changes are present, and especially in pregnancy cases, it is not rare to find retinal detachment occurring, from the transudation of fluid from the retinal tissues into the subretinal space. I found 13 such cases in two years in the medical wards of St. Bartholomew's Hospital.[1] If the patient survives, these detachments usually disappear quite quickly, and in any case no local treatment is called for. The second group consists of those cases in which it is known from ophthalmoscopic examination that a rent is present in the retina, so that the vitreous is free to invade the subretinal space; I believe such cases hold out no prospect of cure.

Other cases of what one may speak of loosely as primary retinal detachment come within the scope of our treatment, but good so seldom results that the prospect often seems hardly to justify the recommendation of a course of treatment which is somewhat tedious and prolonged.

For the last two years I have nevertheless admitted all such patients who were willing, and have treated them on the following lines. They have been confined to bed, and injections of 5 per cent. sodium chloride and 5 per cent. sodium citrate solutions, with the addition in each case of 4 per cent. novocain, have been injected, by means of a hypodermic syringe, in amounts of about 15 minims, under Tenon's capsule over the site of the detachment. The injections cause some local reaction, so that it is not found practicable to repeat them more often than about every third day—i.e., the sodium chloride is injected one day, and three days later sodium citrate; three days later again sodium chloride, and so on for nine or ten injections.

E. J., aged 44, attended at Moorfields on March 30th, 1921, because the sight of the left eye had failed for two months; he had always been short-sighted. He had a large transparent retinal detachment, and I admitted him for treatment. The following details are abstracted from the notes of Mr. E. F. Wilson, house surgeon at the hospital, by whom the treatment was carried out. "In the left eye is a large myopic complete crescent, and a large transparent retinal detachment down and out." The patient was admitted on April 1st, and a month's treatment on the above lines was carried out; on examination, when he was about again, the detachment had completely disappeared. Mr. Wilson's note of May 10th says: "Left eye quiet, pupil dilated; no detachment can be seen; field shows reduction of scotomatous area; few pigmentary changes down and out; V.R.—6=6/9; V.L.—7 =6/12."

Five of my colleagues were good enough to examine the man for me with the express intent of finding if possible any evidence of retinal detachment, and all were agreed that none was present. I do not claim any great originality for the line of treatment adopted, nor do I fail to appreciate that the condition may recur, but for myself I am encouraged to continue on this definite line of treatment, at a time when I had almost despaired of ever effecting any real good, and it is satisfactory to find justification for holding out some prospect of help for a condition looked upon as almost hopeless.

[1] Moorfields Eye Hospital Reports, vol. xx., Pt 2.

LIEBIG'S EXTRACT OF MEAT COMPANY, LTD.—The Board has resolved to recommend an increase in the Company's capital of an additional 180,000 new ordinary shares of £5 each, thus increasing the ordinary capital to 300,000 shares of £5 each.

# OPERATIVE URETHROSCOPY:

## AN IMPROVED URETHROSCOPE.

BY W. WYNDHAM POWELL, F.R.C.S. ENG., L.R.C.P. LOND.,

LATE SURGEON TO THE WESTMINSTER GENERAL DISPENSARY.

FOR a long time I have been engaged in an endeavour to simplify the method of operating in the anterior urethra under air-distension. The variety of instruments on the market show that a satisfactory solution of the problem has not yet been attained. The former difficulties of operating may be summed up under two heads. In the first place means had to be found for retaining the air in the urethra while the instrument was in use, and secondly, the long shaft of the instrument had to be made sufficiently slender not to interfere unduly with the view, or, also, with the illumination when an external light was used. The chief defect was associated with the length of the shaft of the operating instrument, the weakness of which was fatal to all but the most trivial undertakings. That these difficulties have now been satisfactorily overcome, I venture to submit, will be apparent from the following description of the new instruments.

To put it very simply the scheme has been to affix to the distal end of the urethroscopic tube or cannula a short instrument by means of which a small operation can be performed exactly under the same conditions as apply to an ordinary urethroscopic examination. By using the urethroscope as the handle and the cannula itself as the shaft of the instrument, the former long, weak intra-urethral operating instrument is replaced by a powerful one with practically no obstruction to the view.

The scheme involved two problems, which were solved by one device. In the first place the urethra had to be guarded against accidental injury, and secondly, means had to be found for varying the length of that part of the instrument which jutted out beyond the end of the cannula. I found that by housing the long, slender shaft of the intra-urethral operating instrument in a tiny tube or sheath, fixed to either the inner or outer wall of the cannula, and extending from the flange to the distal end, the necessary means for protruding it beyond the end of the cannula and for withdrawing it into the shelter of the tube were secured. Owing to the support which the sheath gives to the shaft and to the insignificant work required of the latter where enclosed and supported by the sheath, only a slender and pliable steel wire is necessary. The distal end, however, requires more rigidity; but as it is necessary to project the instrument for operative work only to the extent of about half an inch beyond the end of the sheath and cannula a very little increase in thickness of this part is sufficient to meet any ordinary strain.

The sheath and its contained pliable shaft, tracing them outwards, leave the cannula altogether at the flange, and terminate away from the line of vision. A small cap, with rubber disc, through which the shaft passes, is fixed to the outer end of the sheath and prevents the escape of air from the urethra by this route. A tiny sleeve-like handle, fitted with a binding screw, can be slipped over the end of the shaft and fixed in any position, controlling the distance to which the instrument can be projected beyond the end of the cannula.

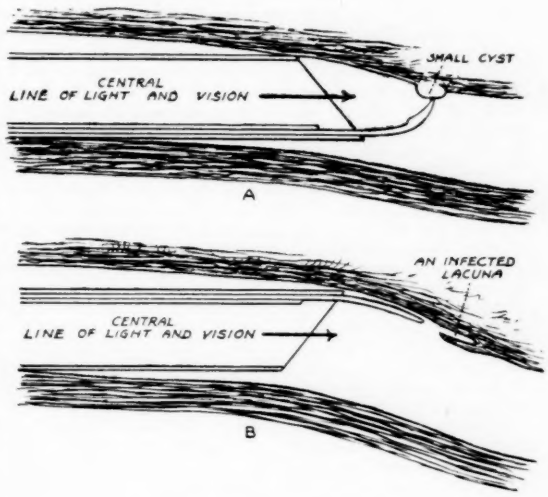
### *Method of Use.*

The urethroscope and cannula with its contained operating instrument are used as one implement with one hand, the other hand, after projecting the operating instrument into the inflated urethra, being left free for other purposes. The operation is performed by moving the cannula in the urethra, and not by moving the stem of the instrument in its sheath, which it fits firmly. The cannula, therefore, must not engage the urethra too tightly.

Even when a filiform bougie or a long silver exploratory probe is used through the sheath it is usually better to push it well beyond the end of the cannula into the inflated urethra and to use it by manipulating the whole apparatus in the usual way. By this method it is easy to catheterise Cowper's ducts when the orifices can be made out. It will be noticed that as the cannula is made to serve the joint purposes of urethroscopy and instrumentation the light during the various movements will automatically follow the point of the instrument, and will at the same time be invariably directed to the spot that is being operated upon.

Owing to the mobility of the parts the oblique end of the cannula can be directed to any section of the urethral wall by tilting the urethroscope, and the least protrusion of the instrument beyond the end of the tube will bring it into relationship with the mucous membrane. An instrument must not be projected beyond the end of the cannula into the urethra until the latter has been inflated, and then only under direct control of the eye, and at the completion of the operation it must be withdrawn into the shelter of the cannula before the urethra has been emptied of air or the cannula removed.

Most instruments are designed to operate across the urethra. If, for instance, a knife in its sheath runs along the wall of the cannula, which is in contact with the floor of the urethra, the incision will take place on the roof of the canal. The snare, and the probe, when used for cauterising the lacuna, will, however, be placed and used on the same side as the lesion. Reference to the illustrations (A and B) will demonstrate this better than can be explained by words.




*Sheathing of the Instruments.*

Instruments, such as the knife and curette, which have an enlarged operating end must be introduced into position in the sheath from the far end of the cannula; some of the others, such as the capillary syringe, must be sheathed from the proximal end. The selected instrument must be in position in its sheath before the cannula is inserted into the urethra, and the little handle fixed in position for a half-inch projection.

Before use a little sterile vaseline may be smeared on the shaft of the instrument. After use it should be withdrawn from its sheath and thoroughly dried before putting away. A disc, in the absence of proper packing, may be improvised from a rubber glove or tube. It is essential when using a cutting instrument to maintain uninterruptedly the inflation of the urethra. Therefore, see that the tubing from

the air bag is fastened to the urethroscope by means of a piece of fine wire and that the connexion between the cannula and the urethroscope is in order and secure. An excellent plan is to practise on an artificial urethra in the shape of a piece of white rubber tubing a size or two larger than the cannula, which should engage it quite loosely.

To anæsthetise the urethra 10 drops of a 1 per cent. solution of cocaine hydrochloride injected into the canal and held in for three or four minutes is sufficient. The cocaine may be dissolved in a 1 in 2000 mercury oxycyanide solution. The injected fluid should not be forced down into the bulbo-membranous region, or the air on inflation will pass too readily through this part into the bladder.

### *Modifications of the Urethroscope.*

Apart from the new operating tubes the body of the urethroscope has been remodelled, but ability to operate through the open cannula without air distension, as in the case of the posterior urethra, is retained as a feature of the instrument.

The mechanism, by means of which nozzle and cannula can be moved further away from the body of the urethroscope, so as to allow room for the play of the handle of an instrument when used through the open tube without air distension, has been accomplished by making the horizontal bar which carries the nozzle reversible. Likewise the head or hood which carries the mirror can be turned back, as in previous models, to facilitate the introduction of an instrument into, and its removal from, the cannula when used in similar circumstances.

The focussing arrangement has been improved and simplified. It is, however, essential, as in the old model, to focus the light from the tri-filament lamp *before* the mirror has been placed in position in front of the lens. To do this, turn back the hood which carries the mirror out of the way, point the bull's eye lens to some white object about nine inches from it, and move the lens by the means provided until the limbs of the star-shaped light are about half an inch wide at the middle where they cross. It is only the small central area of light which is reflected down the cannula, the limbs of the "star" being simply lost. Care should be taken that this central area of light is as perfect as possible and no larger than a threepenny piece. When the mirror has been placed in position in front of the lens by replacing the hood it can be manipulated by two movements, so as to direct the beam of light accurately down the urethral tube. In the first place it can be moved around a vertical axis by rotating the inner cylinder into which it is fixed, and secondly, around a horizontal axis by means of a thumb screw. The rotation of the cylinder is controlled by a binding screw. These focussing details should always be attended to before the instrument is used on a patient.

The switch for the light can be operated with one hand—a point of importance. The telescope, which is now screwed into the centre of the cylinder forming the head, is more easily made in correct alignment with the urethral cannulæ than was formerly the case. The glass window of the air-chamber has been brought right up to the mirror and is surrounded by the cylindrical head. This effectually prevents all reflections of light from extraneous sources which formerly were very annoying. Operating cannulæ are now fitted with a binding screw, making its connexion with the nozzle of the urethroscope secure.

### *Principal Instruments.*

The following is a list of the principal instruments made; those marked with an asterisk are supplied as a standard set by the manufacturers with the new urethroscope:—

*1. Probes for caustic and one long exploratory. *2. Knife. *3. Blunt spoon. *4. Curette. *5. Probe, sharp, for elecrolysis. *6. Capillary syringe. 7. Forceps. 8. Snare. 9. Cautery. 10. Flexible metal bougie. 11. Filiform gum-elastic bougie. 12. Probe and cautery for use with the open prostatic tube.

The examining cannulæ, which are five inches long, are supplied in four sizes—viz., 20, 22, 24, and 26 of the French scale. The operating tubes are supplied in three sizes—viz., 22 F, 24 F, and 26 F. They are four inches long, but any size and length can be obtained by a special order.

### *Notes on the Use of Some of the Instruments.*

*Caustic probe.*—This instrument is chiefly for the cure of chronic suppurating lacunæ. The probe is projected for three-quarters of an inch beyond the end of the cannula, heated in a spirit flame or Bunsen burner, and a very thin layer of lunar caustic melted on to the terminal quarter of an inch. It is then withdrawn into its sheath. The cannula should be passed to its full extent before the urethra is inflated and the probe projected, which should only be to the extent of half or three-quarters of an inch. The sheath with its contained probe should lie over the affected lacunæ. These can be probed as they come into view while the cannula is slowly withdrawn, its distal end being slightly tilted towards the lacunæ. If the projected part of the probe is not well seen on looking down the cannula it must be slightly bent, before it is used on the patient, to bring it well into view.

*Electrolytic needle.*—This needle, connected with the negative pole of the battery, is used for cauterising the small superficial infected and swollen follicles so commonly found in the non-gonococcal variety of urethritis. The follicle is punctured or is entered through its natural outlet. The operation is performed across the urethra and the terminal half inch of the needle must be bent up to bring it well into view. Three to five milliamperes may be used for from five to 20 seconds in each affected follicle. Cysts and large inflamed glands of Littre may also be treated in this way.

*Capillary syringe.*—This is used for syringing out fistulæ, &c., also for treating the large lacunæ if milder treatment than the caustic probe is indicated. Care must be taken not to penetrate the mucous membrane and inject the fluid into the submucous tissues. A rubber teat may be used instead of a small (hypodermic) syringe. The distal end of the syringe should be bent up a little to bring it into view when looking down the cannula.

*Blunt spoon.*—This may be used for milking and collecting the discharge from infected lacunæ, sinuses, &c., for bacteriological purposes. In this way it will be found valuable in the treatment of gonorrhœa.

*Curette.*—For use in wart and polypus cases, and as a substitute for the end of the cannula, for scraping off the heaped-up necrosed epithelium which covers some chronic and sclerosed patches. A dab of silver nitrate solution, 20 grains to the ounce, should follow this treatment, and subsequently dilatation of the canal. Care must be taken not to cut through the mucous membrane with a sharp curette.

*Knife.*—The fear of admitting air into the cellular planes or into the circulation itself deters the cautious from making a deep incision into the urethral wall in the inflated condition. Were it not for this fear a large number of cases of isolated strictures could be easily and accurately cut under control of the eye. Until the subject has been worked out the use of the knife must be confined to such small undertakings as the division of superficial bands, congenital or otherwise, incising small abscesses and cysts, or slitting up sinuses.

*Cautery.*—Sometimes useful in cases of warts, polypi, and cysts, and for endeavouring to seal up the internal orifice of a fistula. Being a powerful means of treatment great care should be exercised in its use. For instance, if used for the cure of suppurating lacunæ the little cavities which result harbour a drop of mucus which appears at the meatus on stripping the urethra, much to the annoyance of the patient.

*Fine-wire snare.*—This instrument will perhaps be occasionally required for polypus cases.

I am indebted to the Genito-Urinary Manufacturing Co., Ltd., and to Messrs. Allen and Hanburys, Ltd., for the care and skill they have shown in the manufacture of all these instruments.

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LITERARY INTELLIGENCE.—Messrs. William Heinemann (Medical Books), Ltd., announce the forthcoming publication of the following: Special Pathology, second edition, by Dr. J. Martin Beattie and Dr. W. E. Carnegie Dickson. The Surgical Exposure of the Deep-seated Blood-vessels, by Dr. J. Fiolle and Dr. J. Delmas, translated and edited by Dr. C. G. Cumston, with a preface by Sir D'Arcy Power. The Surgical Treatment of Non-malignant Affections of the Stomach, by Dr. C. G. Cumston and Dr. George Patry, with an introduction by Sir Berkeley Moynihan.

# Medical Societies.

## ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

THE annual general meeting of this Society was held at 11, Chandos-street on June 17th, the retiring President, Prof. W. J. R. SIMPSON, in the chair.

The PRESIDENT referred to the loss sustained in the death of Dr. A. J. Chalmers, in whose memory had been founded the Chalmers Memorial medal, as a biennial award for researches of outstanding merit contributing to the knowledge of tropical medicine or tropical hygiene.

Sir JAMES CANTLIE was unanimously elected President for the ensuing two years.

### *Snake-bite in India.*

Major R. KNOWLES, I.M.S., read a paper on the Mechanism and Treatment of Snake-bite in India, based on work which had been carried out in conjunction with Major H. W. Acton, I.M.S., between the years 1912 and 1914 at the Pasteur Institute at Kasauli. He said that probably not more than two or three of the many species of vipers in India were fatal to man, and that even in untreated cases of true cobra bite the mortality could not be regarded as much over 40 per cent. Though the number of deaths in India from snake-bite was placed at 25,000 per annum, the cases of snake bite were likely to reach many more thousands. Hence the reputed efficacy of the many antidotal remedies which in reality failed to solve the problem of successfully neutralising a lethal dose of colubrine or viperine venom. Major Knowles described the grouping of poisonous snakes in India under three classes, types of which were represented on the screen: 1. The sea-snakes or *Hydrophineæ*, occurring in the salt marshes around the Indian coasts and at the mouth of the Shatt-el-Arab in the Persian Gulf, and characterised by their large size, fine heads, thin necks, thick bodies, and tails flattened like the blade of an oar. Little was known about their venom, but Sir Leonard Rogers had found it intensely toxic with marked paralytic action on the central nervous system. 2. Indian poisonous colubrines (the cobra, the king cobra or hamadryad, the kraits and coral snakes). The deadly nature of their venom rendered the treatment of snake-bite in India most difficult. 3. The vipers. Of this very common group in India, only two species, the Russell viper or daboia, and the *Echis carinata*, or saw-scaled viper, possessed enough venom of sufficient potency to be fatal to man, and although the small vipers frequently bit human beings, their bites very seldom, if ever, proved fatal.

### *The Study of Snake Venom.*

The study of snake venom could be divided into four sections:—

1. *The estimation of the doses of venom usually injected.*—Experimental observations based on the hypodermic injection of 5 mgm. doses of desiccated cobra venom dissolved in normal saline into 465 rats showed that the rats died on an average 30 minutes after the injections. The minimum lethal dose (M.L.D.) of cobra venom proved by a series of further observations to be $\frac{1}{10}$th mgm. A rat did not die until one M.L.D. had been absorbed into the circulation. With massive injections of venom, the absorption period in the rat was just under 3 minutes, in the monkey it was 7 minutes, and in man probably not less, though not much more, than 10 minutes. It was ascertained experimentally that at a good bite the cobra parted with about two-thirds of the total venom content of its glands. Fresh cobras "milked" of every drop of venom had yielded a mean total of 317 mgm. of venom, two-thirds of which would be 211 mgm., or about 14 or 15 times the M.L.D. for a man. The observations resulting from experiments with the bitten rats showed that the dose of venom each received at a first bite varied between 3 and 360 mgm. of desiccated venom, a mean of 172 mgm. It was therefore concluded that the average dose injected would be somewhere between 211 and 172 mgm., although the actual figures showed extreme variation in the dose, and indeed one cobra had yielded a total of as much as 881 mgm., corresponding to 587 mgm. at one bite or 40 times the M.L.D. for man.

2. *Mechanism of the snake-bite.*—This marked variation was explained by consideration of the mechanism of the bite derived from dissection of the poison gland apparatus and musculature. Major Knowles described the anatomical parts concerned and the muscular action involved in the bite of the cobra showing that the mechanism was so complicated that the cobra might easily fail to yield a lethal dose of venom at a single bite, and where the amount of venom injected might vary from nil to as much as 587 mgm. The chances of escape were, indeed, so great that the mortality, even in untreated case of cobra bite, could not be put higher than 40 or 50 per cent. Major Knowles also gave an account of the bite and nature of attack of the vipers which differed in many respects from that of the cobras.

3. *Toxic properties and composition of snake venoms.*—Not only did the mechanisms of the bites of colubrine and viperine snakes differ, but also the poisonous action of the two classes of venom. Each contained three toxic elements. The colubrine venom included: (i.) a hæmolysin, dissolving the red corpuscles; (ii.) a cardiac stimulant; and (iii.) a neurotoxin capable of paralysing the central nervous system and causing death by its action on the respiratory centre. In man death occurred from asphyxia in 30 minutes to 30 hours from the bite. The viperine venom contained: (i.) a hæmolysin; (ii.) a coagulin, causing blood coagulation and occasionally fatal gangrene, or, in the case of small animals, sudden death by pulmonary embolism from lodgment of a detached clot; (iii.) a cytolysin or endolysin, causing destruction of the fine endothelial lining of capillaries and venules all over the body, which resulted in bleeding from all mucous membranes with both internal and external hæmorrhages, and after the onset of sepsis ended in death from cardiac failure. The fatal issue from cardiac failure might therefore, in the case of a viper bite, be due to a variety of causes and occur in from two to seven days. Major Knowles referred to the fact that the venom being a modified saliva, in addition to its lethal action, it played an important part in digestion. This accounted for the snake's habit of salivating the entire body of its prey previous to deglutition.

Experiments had been carried out to ascertain the effect of heat on venom solutions and to test the toxicity of the heated venoms. It was found that the proteids of cobra venom coagulated at 65°C. and the hæmolysin was destroyed at 80 C., although at that temperature the venom still retained 80 per cent. of its toxicity. The viperine venoms, on the other hand, proved less thermostabile and on heating lost their toxicity more rapidly, and the cytolysin was destroyed at 85°C. Chemical analysis had shown that the toxic principles of snake venoms were of complicated composition, comprising a range of proteids and non-coagulable proteoses. Major Knowles then classified the various poisonous snakes of India according to the toxicity of their venom.

4. *Treatment of snake-bite.*—Major Knowles gave the following conclusions as to the value of physical measures: (1) Excluding amputation or excision of the bitten part which to save life must be immediate and not delayed beyond a quarter of an hour, all physical measures were but supplementary to other forms of treatment. (2) Ligature of the limb after cobra bite merely locked up the venom, which flooded the circulation as soon as the obstruction was released, and eventually killed the patient. In the case of viper bites, however, ligature might save life, as the venom by giving rise to local thrombosis was not absorbed into the general circulation,

although gangrene often resulted. (3) Artificial respiration was useful in colubrine bites, if an antidote was available to neutralise the venom after its absorption. (4) Incision and forcible expression of the venom, cauterisation, electrolysis, bleeding, and saline perfusion were measures of but little avail. He then estimated the value of certain chemical remedies.

About 200 chemical reagents had been tested, and those found to neutralise venoms *in vitro* were numerous. (1) The action of tissue extracts, bile, and ferments was slow and weak; (2) caustics acted solely by causing proteid coagulation. (3) Oxidising agents—e.g., chlorates, permanganates, hydrogen peroxide, and antiseptics were only weak antidotes; (4) soluble salts of heavy metals—e.g., chlorides of gold, platinum, palladium, mercury, zinc, and silver provided most hope of effective remedy by chemical means. The value of local remedies was limited by and dependent on two factors: (*a*) the necessity of injection before a fatal dose of venom had been absorbed into the general circulation—in the case of cobra venom, this period for man was about 15 minutes, a time limit which was increased by effective ligature; (*b*) their capacity only of destroying the venom with which they came in contact at the seat of injection, provided an efficient ligature had been applied. The subcutaneous injection of chemical antidotes gave better results than did incision and rubbing in moistened crystals. Major Knowles referred to the failure of the Lauder Brunton technique with potassium permanganate crystals and to the greater efficacy of forcible injection into the tissues at the seat of the bite, particularly in the use of zinc permanganate solution. Iodine tetrachloride and other known remedies had proved less satisfactory, but immediate subcutaneous injection of 10–20 c.cm. of 1 to 5 per cent. solution of gold chloride was more reliable than any other form of local remedy. Its neutralising effect was greater when brought in contact with larger doses of venom in concentrated solution, than on small doses in dilute solution. Intravenous injection of chemical solutions was useless. The value of all local remedies was greater in the case of viperine than of colubrine bites. They acted by causing local coagulation necrosis, destroying both tissues and venom, and so were productive of local gangrene. After the lapse of 15 minutes from the bite—that is, when one M.L.D. of venom had been absorbed—it was necessary to supplement local by systemic remedies. Thence had originated that important section of their work dealing with the study of antivenene.

*Antivenene.*

To Calmette the world was indebted for the introduction of this very promising method of treatment. Calmette's observations, however, had led to the erroneous conclusion that a cobra did not inject more than 20 mgm. of desiccated venom at a good bite. This their own experiments had disproved, for as already stated, there might be a yield of anything from 0 to 570 mgm. of venom from a single bite. Calmette had also regarded 1 c.cm. of antivenene *in vitro* as neutralising 1 mgm. of desiccated cobra venom. Their results with rats had clearly established this to be a considerable underestimate, for they had found that the *in vivo* value of 1 c.cm. of antivenene was only equal to $\frac{1}{10}$ mgm. of desiccated venom. The antivenene now in use in India was all prepared at Kasauli by immunising horses against the venoms of the cobra and Russell's viper. It was strictly specific and experimentally was incapable of neutralising other colubrine or other viperine venoms. Its potency, however, was weak and diminished on keeping. Improved results could be obtained, firstly, by altering the mode of administration, the intravenous method being more effective than the intraperitoneal, and the latter than by hypodermic injection; secondly, by securing a concentrated antivenene by methods analogous to those for the concentration of antidiphtheritic serum. This had eventually been arrived at after two years' experimental work at immunising the antivenene animals for colubrine and viperine venoms and by testing the various methods of serum concentration. The final product realised a potency twelve and a half times as great as the original sample. Major Knowles then explained the action and properties of antivenene and nature of the venom—antivenene complex. He said that the concluding part of their work at Kasauli in August, 1914, was concerned with the immunity of the cobra to its own venom, and with the endeavour to discover some antivenomous tissue extract in a cobra, which they had only succeeded in killing after intraperitoneal injection of as much as $\frac{3}{4}$ g. of desiccated venom. The bile alone showed any antivenomous activity, but was inferior in that respect to ox-bile. The cobra's immunity to its own venom was regarded, from the result of their observations, as probably due to a deficiency of the necessary complement.

Summarising the treatment called for in a case of snake-bite the following steps were recommended by Major Knowles: 1. Instant firm ligature to the limb above the site of the wound; 2. Killing and identification of the snake—(*a*) if non-poisonous, no further steps would be required; (*b*) but if one of the small vipers, a dose of calcium lactate might be given, the ligature removed and the patient watched; (*c*) if, however, the bite had been caused by one of the six really lethal Indian snakes, on the toe or finger, amputation might be advisable, but with the bite elsewhere than on the toe or finger forcible subcutaneous injection of gold chloride solution should be made into the site of the wound in order to isolate and destroy the whole dose of venom, but previous incision was not called for; (*d*) in the case of bite from a cobra or Russell's viper, 100-200 c.cm. of antivenene should be given intravenously, but if injected hypodermically three or four times that quantity would be necessary. On removal of the ligature after 20 minutes, careful watch over the patient was most essential, with a view to injecting more antivenene, and applying artificial respiration as well as the administration of cardiac stimulants. In the case of viper bites hæmorrhages might be expected after the lapse of hours or days from the time of the bite. He concluded it should be possible to save 80 per cent. of all cases of lethal snake-bite, if those remedies were available and were used sufficiently early. The prospects of finding a safe and reliable remedy against the bite of the most poisonous colubrine snakes were encouraging. The dichloride of palladium had proved, experimentally, even more efficacious than the gold salt, and it was possible that the palladium salt, by forming a new compound of heavy metallic ion with the antivenom, suitable for solution and for intravenous injection, might provide the desired remedy.

*Discussion.*

Sir LEONARD ROGERS, who had been interested in the subject of snake-bite and its treatment for the past 20 years, referred to early work of his on the physiological action of different classes of snake venoms published in the Philosophical Transactions of the Royal Society in 1904. He had dealt with the venoms of the cobra, king cobra, common krait, and banded krait, which produced respiratory failure. The venom of sea snakes, or *Hydrophineæ*, was very toxic and also caused respiratory failure. In connexion with viperine venoms he mentioned the work of Weir Mitchell as having proved their hæmorrhagic action and some vasomotor paralysis. As had been shown by Lamb, intravascular clotting was caused by the venom of Russell's viper. Describing his own observations, with a M.L.D. of viperine venom a rapid fall in blood pressure had been obtained, followed by respiratory convulsions and then a rise in blood pressure. Post-mortem examination had shown no intravascular clotting either in animals or man, and the blood was incoagulable. The fall in blood pressure was at first difficult to explain and was found to be due to vasomotor paralysis. Moreover, there was no clotting even in the pulmonary capillaries. On division of the spinal cord in an animal experiment there followed a fall

in blood pressure, and subsequent injection of viperine venoms produced no further dilatation of the blood vessels, and, vice versa, there was evidence of vasomotor paralysis produced by these venoms, including those of the African puff-adder, whereas the rattlesnake caused no clotting but only vasomotor paralysis. He mentioned adrenalin and pituitary extract as having a marked effect in averting vasomotor paralysis following a small dose of venom. The use of antivenene for bites of viperine snakes as employed by Lamb was important to counteract vasomotor paralysis. Antivenene against cobra bites was also active to a less extent against the venom of the *Hydrophineæ* or sea snakes. Local antidotal treatment, by means of Lauder Brunton's snake lancet and permanganate cauterising, should be immediately followed by injection of antivenene if available. He had recorded recovery in 10 out of 12 cases of snake-bite with the use of potassium permanganate and incision, and he recalled that gold chloride was found by D. D. Cunningham to be more effective than any other drug; but time was the essential factor in the treatment of snake-bite, as cases must be seen very early to give much chance of success.

DR. ERNEST BLACK stated that he had conducted experiments with snake venoms 20 years ago. There was then the widespread but mistaken view that antivenene should be used universally, whatever the snake might be. But it had since been definitely established that antivenene was not specific except for the actual species of snake venom from which it had been prepared. Its use against other snake-bites might indeed accelerate death.

Major H. C. BROWN, I.M.S. (retired), described briefly the process of immunisation of the horse to snake venoms and drew attention to the difficulties connected with it, chiefly owing to abscess formation. He suggested that the valuable work of Major Knowles and Major Acton on the concentration of antivenene might obviate this difficulty by keeping the horse on small doses of venom and subsequently concentrating the antivenene. He said that he had had experience in controlling hæmorrhages such as epistaxis by the administration of normal horse serum, and suggested that this serum might be of value in the hæmorrhages due to viperine bites; he had treated one case of *Echis carinata* bite, showing extensive hæmorrhages, with normal horse serum with apparently much benefit to the patient. He asked Major Knowles whether he had had any experience in the use of normal horse serum or of non-specific antivenenes in cases of hæmorrhages due to viperine bites.

Major KNOWLES in replying stated that the use of permanganate crystals following incision into the wound was not to be compared in value with that of injection of the salt in solution into the site of the snake-bite, as the latter method had much better chance of reaching and destroying the venom. He regarded the beneficial effect of horse serum in arresting hæmorrhage as being due to hæmostatic action, but he had no experience of its use in the treatment of hæmorrhages due to viperine bites.

Sir JAMES CANTLIE, concluding the discussion, said that he had seen Calmette's work at Saigon 20 years ago and he now realised that much of what he had learnt then was incorrect as regarded the dosage of antivenene. He gave reminiscences of cases of snake-bite in China and recalled the native method of treatment, then in vogue, of applying a tourniquet above the bite for long periods, as the result of which the wounds remained unhealed for several months.

UNIVERSITY COLLEGE, LONDON.—The following awards in the Faculty of Medical Sciences have been made at University College: Cluff Memorial Prize: Katharine A. C. Gillie. Anatomy—Senior Class Gold Medal: L. Reuvid; Junior Class Silver Medal: Mary E. Tyars. Physiology—Senior Class Gold Medal: Katharine A. C. Gillie; Junior Class Silver Medal: Iris M. Harmer. Organic and Applied Chemistry—General Course Silver Medal: Marian G. Palmer.

## MEDICO-LEGAL SOCIETY.

A MEETING of this Society was held on July 7th at 11, Chandos-street, Cavendish-square, W., the President, Lord Justice ATKIN, being in the chair. A paper was read by Prof. A. LOUISE MCILROY on

*Some Factors in the Control of the Birth-rate.*

Prof. MCILROY said that a nation was maintained in power according to the endurance, strength, and fertility of its members; if the individual could not contend against destructive forces it must have increased fertility to compensate for the consequent mortality. When a high degree of civilisation gives capacity for self-preservation fertility is low; of animals which reproduce by spawning a large number are lost; in contrast with this type is the comparatively small multiplication of the human race. In the latter, moreover, there is low fertility in the better educated classes and high fertility in the lower or submerged classes. In Britain the birth-rate increased rapidly in the industrial period of the nineteenth century, when there was great commercial expansion and demand for both adult and child labour. Large food-supply areas were opened up and methods for the lowering of the death-rate were considered; but during the past 40 years the birth-rate in England fell steadily until it is about one-third of that of 1860; also, during the war, the best stock was sacrificed to save the Empire from destruction. The low birth-rate in France had very serious consequences for that country in 1870; to it may be attributed Germany's opportunity in 1914. The birth-rate was high in Eastern Europe, especially among the prolific but short-lived Slav races; thus Russia had always been a menace to the great Saxon and Teutonic nations.

Had the decline in the birth-rate in Britain any political significance, or was it merely nature's method of keeping an expanding population in check? The evidence given before the Birth-rate Commission went to prove that although the decline is due in part to economic and trade conditions, it mainly owes its low rate to the artificial control of conception. The normal checks by which a country's population is kept within economic limits were the death-rate and the restrictions upon fertility; the death-rate was maintained by age, disease, war, dangerous occupations and environment, and fertility was restricted by civilisation, the limited reproductive life of a woman, delayed marriage, abortions, &c. Other factors which influenced the death-rate were fœtal and infantile diseases, infanticide, illegitimacy, alcoholism, venereal diseases, and prostitution. The arguments in favour of a low birth-rate were individualistic; a small population left more room and gave better social conditions, more demand for labour, and higher wages. In China, where there is a high birth-rate and where the population might be said to have reached the point of saturation, there was a high death-rate, especially marked among infants, few means being taken for their preservation.

The arguments for a lowering of the birth-rate were put forward in justification of the ideal that a small number of useful well-cared-for healthy citizens are more beneficial to a State than a large number of unfit; there would be no danger to the British Empire if other nations also controlled their populations, but it must be remembered that Germany was not beaten, and would encourage any influences which would tend to diminish the fighting resistance of Britain and France. In the East, where reproduction is encouraged to its utmost limits, Japan and China might yet form a danger to the white races. Was the supremacy of the British Empire to be maintained over the native races in the face of a rapid fall in the birth-rate both at home and in our colonies? Such a fall had been the end of many of the great nations in history. The dangerous aspect of the question of birth control should not be ignored by the State; there was no evidence of excess of population in

Britain; excessive overcrowding in cities was due to unequal distribution of the population. The dissemination of the knowledge of methods of birth control dated from the time of the Bradlaugh and Besant trial in 1877.

Voluntary control might be divided into two classes, (1) criminal abortion; and (2) contraceptive methods. It was not, perhaps, quite correct in every case to use the word voluntary; the denial of the natural maternal instinct of women might be compulsory in so far as it was due to great economic and social pressure.

*Criminal Abortion.*

By criminal abortion was here understood all cases of artificial termination of pregnancy without the consent of the medical profession—i.e., fœticide or murder, no matter what justification might be given for its employment. It was increasing in this country and in America, was one of the prices we are paying for civilisation, and was widely used for the termination of legitimate as well as illegitimate conceptions; information of its employment was only obtained when the maternal victim had lost or was in danger of losing her life. Just punishment should be meted out to the couple who consented to the practice of abortion, as well as to the individual who procured it. There were two classes of criminal abortion from the medico-legal standpoint—those where the woman brought it about herself, and those where another individual performed the operation. In hospital practice women were constantly admitted suffering from hæmorrhage or sepsis, the result of self-induced abortion; the cause was perfectly apparent, but no action was taken beyond the giving of a moral lecture. In cases where abortion had been procured by another individual and where the patient came up for treatment of a condition which did not end fatally, was the medical attendant responsible for its notification, or must he wait until dangerous symptoms occurred and then be told in court that he was liable for imprisonment for concealing the facts from the onset of the fatal condition? It was difficult to estimate the prevalence of abortion. Until notification of all interrupted pregnancies was secured our knowledge of the loss of early ante-natal life was mere guess-work. Educate public opinion and provide facilities for adequate treatment and there would be little difficulty in estimating the prevalence of abortion.

*Contraceptive Methods.*

Knowledge of the use of contraceptive methods was now almost universal; books were sold broadcast in Britain, and meetings were held where sex problems were freely discussed; old-fashioned morality, like religion, was condemned as out-of-date. Societies competed in their efforts to spread information; the main arguments employed were that contraceptives formed a desirable alternative to criminal abortion, permitting of earlier marriages, and therefore diminishing venereal disease, illegitimacy, and prostitution, and the dangers of the unchecked propagation of the lower classes at the expense of the better and more prudent members of society. Malthus directed attention to the dangers of over-population and enjoined sexual abstinence as the remedy; the members of the Neo-Malthusian League supported his arguments but recommended contraceptive methods. The majority of supporters of birth control were perfectly genuine in their desire to solve the great social and economic problems of the day; but there must be danger in widespread and uncontrolled knowledge of sex matters and contraceptive methods. There must be some deep-rooted moral reason for the innate sense of modesty and reserve which only approached such subjects with reverence and which had for its purpose the preservation of the race. The traditional mystery of sex knowledge must have had some physiological basis to have withstood the length of ages. Was it not a sign of decadence that young men and women openly discuss before marriage the numbers of their future family, and when young women employ contraceptive mechanical or chemical methods as an immediate preparation for the marriage day? The medical profession were all agreed that a knowledge of sex hygiene is desirable, but it must to a certain extent be preceded by a moral and religious education. The young generation had gained much liberty, but might be losing the power of self-control. The future of the nation lay in the hands of women, properly educated, who realised what race suicide meant.

*The Medical Aspect of Birth Control.*

Limitation of the birth-rate should be for medical reasons only and should be considered from two points of view: (1) the possible danger of pregnancy to the individual; and (2) the undesirability of propagation of the unfit. Pregnancy might have to be prevented in the presence of some pathological condition, such as tuberculosis, toxæmia, venereal disease, or insanity, and in cases where too frequent pregnancies were undermining the health of the woman concerned. Propagation of the unfit might have to be prevented owing to the danger to the community of feeble-mindedness and increase of the criminal alcoholic classes. Surgical sterilisation for other than health reasons was absolutely to be condemned. There was no justification for the mutilation of an individual; moreover, the reproductive organs had a physiological influence upon metabolism apart from their specialised functions. The Jews condemned contraceptive measures and marriage of the unfit, with the result that their race persisted in spite of many difficulties.

It might be to the credit of the medical profession that it had hitherto avoided open discussion of such questions from a sense of morality and purity. But now the knowledge had been disseminated, and the profession must take up the question. If it is wrong to make use of contraceptive methods the profession should say so; if contraceptives are necessary, guidance should be given in their employment; they should then be sold by chemists of repute, and be obtainable on the order of any practitioner who advises their use.

The advocates of birth control quoted the approval of some of the members of the medical profession and medical journals. They spoke of the misery of the unwanted child and the worn-out mother, and at the same time they encouraged excessive sexual relationships among the married by depicting their delights and physiological necessities. How long were the medical profession to suffer the spread of such knowledge? Scientific and reliable methods must be discovered and kept under medical advice and control. Surely if the induction of abortion required the presence of two members of the profession for its justification the use of contraceptives should be controlled by similar ethical regulations. The methods employed were inseparable from the love of comfort and luxury which terminated the life of all civilised nations. They might be divided up into so-called physiological methods and the employment of chemical and mechanical appliances. Abstinence from sex relationship was possible in the unmarried state where the creative force was used in other directions, and where stimuli were avoided; it was easy for some individuals, difficult for others. In the married state it presented a different problem. Couples living in intimate affection were exposed to constant stimuli; ideals might be lived up to, but the resultant strain might be followed by evils worse than some contraceptive methods—namely, estrangement, unhappiness, infidelity, and divorce. Marriage was primarily for the controlled sexual relationships and the bearing of children. The church advised, in cases where abstinence was impossible, that sexual relationships should be restricted to the mid-menstrual period where fertilisation is at its lowest curve; but this was the period of least desire and had therefore an artificial aspect. Sexual relationships were matters of impulse and demanded satisfaction like hunger; the mutual desire of a married couple meant their happy balance. Intercourse when premeditated and when precautionary measures were taken was no longer a

spontaneous act; and the other artificial methods of birth control, were, as a rule, unreliable and offended the æsthetic sense; they led to local pathological conditions and to general neuroses. Their advocates had not unlimited faith in mechanical methods, as in most cases they advise their combination with chemical substances such as quinine.

*Discussion.*

Dr. AMAND ROUTH said that the expression "birth control" was misleading in a special sense; "conception control" was a better term for the methods of contraception under discussion. The smaller families of the present day resulted from knowledge of conception control, and every method in use was harmful to the nervous systems of those employing it; *coitus interruptus*, the method most common amongst the poor, was the most harmful of all. No means of conception control, save that of abstention from intercourse, should be used except upon medical advice. It was perfectly easy for a married couple to have a child every two years; taking into account the periods of pregnancy and lactation, for neither sex would the necessary self-control be too difficult.

The speaker then read statistics relating to the high rates of ante-natal, intra-natal, and neo-natal mortality in the British Isles, dealing in turn with prematurity, difficult labour, toxæmia, syphilis, and the significant heading "unknown causes." The facts of latent syphilis during pregnancy, he said, had recently been discovered, giving the explanation of the birth to infected parents of non-infected children; the spirochæte could be broken up into granules and rendered harmless by defensive chemical action taking place in the placenta. If every pregnant woman came under proper treatment congenital syphilis could be obliterated. The difficult position of a doctor in a case of induced abortion had been considered some time ago by the Royal College of Physicians of London, who passed resolutions to the effect that (1) a moral obligation rests upon every medical practitioner to respect the confidence of a patient, and (2) every medical man should urge his patient, particularly if there was likelihood of the latter's death, to make a statement as to the performance of the operation.

Earl RUSSELL wished to know the ideal behind the encouragement of an unchecked increase of population. Some people felt that it was advocated by those whose only concern was the supply of cannon-fodder for the armies. For himself the size of the British Empire mattered little; what mattered was the happiness and intellectual progress of its people. According to Prof. McIlroy and Dr. Routh the parents had apparently little to do with the matter; but medical measures of control would have to be of a nature acceptable to the laity, and many of the laity were not in an economic position to raise families except with State aid for mother and child. He totally disagreed with the idea that it was shocking for engaged couples to discuss fully the matter of children; such discussion marked a great improvement on Victorian ideas, and showed forethought not to be deprecated in the building-up of the nation. If it were true that all contraceptives were harmful, it was the duty of the medical profession to make the facts known to all. From the Parliamentary and legislative point of view, if the sale of contraceptives was made illegal, as urged by the Bishop of London, it would lead to much more serious evils, including a great increase in criminal abortion.

Dr. H. G. SUTHERLAND said that the economic side of the question of birth control was raised in the interest of the poor; but it was not the poor who failed in their duty—it was the well-to-do, whose motive was not economic difficulty, but selfishness.

Dr. BERNARD O'CONNOR considered that there was no logical difference between germicide and infanticide. The medical profession must set its face against immorality.

Dr. HADEN GUEST believed there was no definite solution to the very complicated sexual problem. Control of the sexual impulse was, as Prof. McIlroy had said, very necessary; but in England control was understood to mean repression. Life was happier in the Latin countries because there means were found for freer sexual expression. In India, where unfaithfulness in marriage was rare, the young people were highly trained to make love; they were taught to express themselves, not to bottle up the impulse in the manner of the Anglo-Saxon and Teutonic peoples. Sexual impulse could be trained and refined, but not repressed. Many of the methods of contraception were harmful; others, so far as he knew, were not; and what harm they might do must be counterbalanced by the harm resulting from repression. Under the present economic conditions, and in the present age of badly-adjusted nervous mechanism, few people could successfully raise a family of children born at the rate of one every two years.

Mr. BERNARD SHAW said that he viewed the subject without prejudice; the view of the Catholic clergy might be described as superstitious, but priests were men accustomed for long years to give good domestic advice. A priest would laugh at the idea that a life of complete abstinence in this respect was impossible; comparison of the voices of the men who sang in Westminster Cathedral with those of some who sang in music halls would suggest that such a life brought certain compensations. But he gathered that neither priest nor doctor really knew anything about the subject. As regards the view of the population as people who would fight, only 11 per cent. of British subjects were white, and only 35 per cent. of the people of the French Republic; both these countries could put enormous armies of black, brown, and yellow men into the field in time of war, and birth control amongst the whites might mean their swallowing up by those of other colours. He favoured birth control for the sake of control, which was desirable for its own sake in all human activity, and marked a step forward in civilisation and development. With reference to methods of control, he agreed largely with Dr. Guest; the harmfulness of these methods varied largely with the individual. Housing and diet had much to do with the provision of frequent stimuli. Parents naturally considered the question of expense. If women were really intelligent they would refuse to bear children unless they were well paid by the State for so doing. The income-tax form was, however, a beginning in this connexion. The reader of the paper had spoken of natural modesty, but in his opinion a great deal of modesty was not natural, but violently inculcated. The revolt against conventional modesty had resulted in immodesty. He wanted to appeal to the medical profession not to put forward claims to interfere in the private lives of married people.

Lord Justice ATKIN, in summing up the discussion, described as paradoxical the endowment of motherhood as a suggested cure for recourse to contraception; the necessary taxation might become so heavy that compulsory contraception would also become necessary. His experience in the criminal courts had shown him the misery caused by the professional abortionist. From all points of view birth control was a matter of the gravest importance in social and family life; married people owed a duty to the State, the stability of which rested upon the way in which children were born and bred; the use of contraceptives was undesirable because it favoured the avoidance of marriage and of the birth of children after marriage. It might come to a question of reasonable use of contraceptives; their total abolition was a counsel of perfection. The knowledge concerning them could not now be eradicated. The medical profession should make known statistics dealing with the effect of their use upon health rather than interfering with the tide of knowledge already abroad. The society was greatly indebted to Prof. McIlroy for her brave and open treatment of the subject.

Prof. MCILROY, replying, said that the discussion had shown her that no guidance was to be had in the matter. The whole question must be taken up by the

medical profession, for no one knew anything about it. With regard to Earl Russell's question as to cannon-fodder, she considered that the happiness of the entire world depended on the supremacy of the white races. She recognised the difficulty of the economic burden, but had not had space to include its consideration in her paper. It was obvious that many people would rather give one child a good education than be forced to have several children educated in a less complete way, but there were now schemes of insurance by which this difficulty might be overcome. With reference to the methods of contraception, she had no personal experience of the harmful results of quinine. The use of a cap placed over the cervix was most harmful; this means was advocated by up-to-date supporters of birth control, but the cap did not always remain in place, and when it did the discharge from the cervical glands was retained. There was no proof that the spermal fluid was absorbed by the vaginal glands; the existence of those glands was not yet certain, and in her opinion absorption took place through the cervix.

In conclusion, Prof. McIlroy described the contrast between the healthy and prolific lives of the Slav peasants in Serbia and Bulgaria with the decadence of the upper and middle-class Russians whom she had met in great numbers as refugees at Constantinople. The latter had committed race suicide and were dispossessed by the cleaner-living peasantry of their country. Sex instinct was created for one purpose only, and must have some outlet if its normal activity is interfered with. Continence in marriage would certainly be assisted by separate bedrooms and other housing facilities. In India, a country of prolific and moral people, the women were dressed properly and kept out of the public view; whatever we might call the Turk, he was one of the most moral of men in his sexual relations. Modesty must be retained for race preservation. As regards the right of the medical profession to interfere with the lives of married people, the supporters of the use of contraceptives had already interfered; the medical profession had been backward in its reply. The whole question must be brought into the open air and put on a proper basis.

## MIDLAND TUBERCULOSIS OFFICERS.

*Formation of a Sub-group of the Society of M.O.H.*

A MEETING of Midland tuberculosis and assistant tuberculosis officers, convened by Dr. A. Ashkenny, tuberculosis officer, West Bromwich, was held in Birmingham on July 9th. Dr. G. B. Dixon, tuberculosis officer, Birmingham, was elected to the chair. After the chairman explained the object of the meeting the following resolution was adopted unanimously:—

That this meeting of Midland tuberculosis officers and others interested in tuberculosis approve, and hereby resolve to form themselves into, a Midland Tuberculosis Sub-group of the Tuberculosis Group of the Society of Medical Officers of Health.

The chairman was elected temporary president and it was further resolved:—

That a temporary committee of five members be formed of those employed exclusively in clinical tuberculosis work to assist the President until the next meeting of the sub-group in October.

The following members were elected to this committee: Dr. T. R. E. Elliott, Dr. A. G. Campbell, Dr. J. A. M. Clark, Dr. D. J. Peebles, Dr. H. Gordon-Smith. The following were coöpted to assist the committee and president: Dr. N. A. Coward and Dr. Edwards.

CONTROL OF MEASLES IN LONDON.—The recommendations of the Public Health Committee of the London County Council, which appeared in THE LANCET last week, were adopted by the Council without further debate. The Council will now consult the metropolitan borough councils regarding the issue of a circular to medical practitioners in London, directing attention to the facilities available through the public health services for the nursing of cases of measles in London. Representations will also be made to the Minister of Health, that in the opinion of the Council it would not be desirable to adopt the proposal to make measles compulsorily notifiable by medical practitioners throughout London.

# Reviews and Notices of Books.

SYPHILIS.

*Syphilis and its Treatment, with Especial Reference to Syphilis of the Skin.* By WILFRED S. FOX, M.A., M.D., B.C.Cantab., M.R.C.P.Lond. London: H. K. Lewis and Co., Ltd. 1921. Pp. viii. + 195. 36s.

Dr. Fox is happy in the material which he has selected to place before the reader and in the manner in which he has presented it. The emphasis on the dermatological aspects of syphilis implied in the title may help to foster a sense of proportion in respect to the diagnosis and treatment of syphilis which is in some respects lacking at the present day. When a medical man who does not possess a sound knowledge of dermatology undertakes the entire charge of a patient suffering from syphilis he is assuming dangerous responsibility, while extension of the purely empirical treatment of syphilis is deplorable. Attendance at a venereal clinic for a short time may render a practitioner sufficiently adept in the administration of intravenous medications, but it should also teach him how hard it is to become proficient in the treatment of syphilis. By the attention which Dr. Fox has devoted to the dermatological aspects of the disease he has rendered great service to the profession.

In the earlier part of the volume he deals adequately with the differential diagnosis of chancres, and figures of the various lesions of the same level of excellence in the numerous other illustrations would have been helpful. With Chapter IV. Dr. Fox enters upon an account of the secondary period. After giving a general description of the secondary cutaneous lesions he turns to the general pathogenesis of cutaneous syphilides, of which he writes admirably. Dealing with the confusing subject of secondary rashes he is certainly happy in his method of classification and description. He adopts a classification of secondary rashes based upon "the dermatological elements they exhibit," which is undoubtedly a more scientific method than that founded upon the chronological order of their appearance. A knowledge of the anatomy and physiology of the skin is assumed for the reader, and might perhaps have been added. The medical student learns little about the skin during his anatomical and physiological career, and during his hospital life, though he may see many of the lesions affecting this structure, the gap is seldom filled. Perhaps in the next edition Dr. Fox will consider this point worth his attention. Chapter VII. is devoted to a consideration of "the Wassermann Reaction," and the author utters a warning note against the empirical reliance upon the results of the test. The course to be adopted when patients with an old history of syphilis present themselves for medical examination, after a long period of uninterrupted good health without treatment, requires close consideration. When clinical investigation reveals neither signs nor symptoms, should such persons be subjected to the Wassermann test? It may easily be positive, and though the patient might have lived for the remainder of his days without exhibiting any lesions attributable to the original attack, his life is rendered one of continuous terror. The "tyranny of the Wassermann reaction" is upon him. The practitioner need never hesitate to seek special guidance when confronted with such a problem.

Another subject upon which we need information is the data on which to base an opinion as to when a patient may be allowed to marry. What are the fundamental principles which must guide to so momentous a verdict? Much may be deduced here from a careful study of Dr. Fox's work.

We recommend this work to all who deal or intend to deal with syphilis.

*Atlas de Syphilimétrie.* Les conditions expérimentales de l'extinction de la syphilis. By Dr. ARTHUR VERNES. Paris: Libraire Félix Alcan. 1921. Pp. 121. Fr.35.

IN his "Atlas of Syphilimetry" Dr. Vernes strikes out a new line in the control and treatment of syphilis. He first establishes his diagnosis, not only whether syphilis or not, but the *degree* of syphilis; then he carries out his line of treatment; and finally puts every case to a supreme test, which he calls the "law of the three eights." He states that out of 20,000 cases no patient who has satisfied this law has ever been found to show any further sign of syphilis, nor has the offspring of any such patient shown any hereditary taint of the disease. His book is divided into five parts under the following headings: I. The Principles of Syphilimetry. II. The Law of the Three Eights. III. Arsenical Treatment. IV. Centres of Resistance and Mercury. V. Syphilitic Infection and Syphilimetry.

According to Dr. Vernes syphilis provokes a definite change in the blood serum. On adding to any human serum a substance which he calls péréthynol (a fluid containing an infinite number of ultra-microscopic granules in suspension) there occurs "flocculation"—that is, the granules congregate into masses, microscopic at first, later more and more visible. Péréthynol is prepared by extracting horse's heart with ethylene perchloride and alcohol, the details of the procedure being very elaborate. In syphilis this phenomenon of "flocculation" is much more marked in proportion to the intensity of the infection. If pig's serum is introduced into a suspension in process of "flocculation" the collections of granules disappear. On the other hand, pig serum is hæmolytic for sheep's red corpuscles. Dr. Vernes adds together péréthynol, human serum, pig serum, and, later, sheep's cells, and finds that the hæmolysing power of the pig serum varies inversely with what he calls its property of preventing flocculation, so that the degree of hæmolysis may be taken to correspond to the intensity of the syphilis, being complete with a normal serum and nil with a powerful syphilitic one. The degree of hæmolysis is compared with an artificially prepared scale of tints: T 0, T 1, T 2, T 3 . . . . T 8. (T 0 = no hæmolysis; T 8 = total hæmolysis); and in this way Dr. Vernes claims to be able to measure the intensity of the infection and to plot it as a curve.

The "law of the three eights" depends on the observation that normal serum always gives tint 8, corresponding to complete hæmolysis in the colorimetric scale. With the development of syphilis the curve rises from 8 to 0. The action of arsenical treatment shows itself by a gradual fall, which may be transitory or permanent. A return to tint 8 is considered permanent when the patient has satisfied the test of the *three eights*—tint 8 on examination once in each of eight months commencing from the last arsenical injection, and tint 8 with the cerebrospinal fluid at the end of this period.

Dr. Vernes claims that he has not seen this law broken, in spite of strict control for ten years. The patient who has fulfilled this test can contract syphilis anew, and infants born under its protection have never, according to him, shown any signs of syphilis, clinical or serological. He makes a great point of the rhythm of treatment and insists that it is much more important than the total dosage. He believes that the only permanently resistant form of syphilis is G.P.I., and says: "In any suspected case of this latter, successful treatment invalidates the diagnosis." He also contends that "the essential character of intervention to be effective is *intensity*."

Dr. Vernes is to be congratulated on the production of a lucid and interesting atlas. The excellent charts are in no way cramped and are, for the most part, to be found close to those parts of the text to which they refer, thus saving the reader the trouble of hunting for them. The author makes many bold statements, and claims, even to dogmatism, and he will find a number of people who do not agree with him. For example, he attempts to criticise and discredit the Wassermann reaction by saying that it is not a true application of the Bordet-Gengou phenomenon. His own experience is founded on a very large series of cases, and if only half of what he claims be true, his methods would warrant an exhaustive trial. We could have wished for some further explanation of how the author fixes his courses of treatment and the amounts of individual doses and their spacing; in some cases a dose is smaller in amount than the preceding or succeeding one, even when no blood examination has been done in the interval. Nor are we told what proportion of all cases or of each kind in the author's series has satisfied the "law of the three eights." The methods set forth demand considerable skill and experience and a perfectly fitted laboratory, but what man, who has any real knowledge of the ravages of syphilis, would hesitate over trouble and expense if convinced that good results could be obtained thereby? The atlas of syphilimetry and the articles by the same author which preceded it should be studied by all who have to do with the pathology and treatment of syphilis.

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*Syphilis.* Tome I. Généralités et Syphilis de l'Adulte. By EMILE SERGENT, L. RIBADEAU-DUMAS, L. BABONNEIX. Paris: A. Maloine et Fils. 1920. Pp. 595. Fr.28.

THIS volume is the result of a collaboration of several contributors, all of whom are well known as authorities on the subject concerning which they write. The first part deals with the pathology, diagnosis, and treatment of syphilis in general; in the second part are sections dealing with syphilis of the different systems of the body, skin, mucous membrane, abdominal viscera and thorax. Each of these sections has been contributed by a different writer, and the result is the furnishing of a vast amount of information from the pens of recognised authorities on the subject. The manifestations of syphilis are so protean that it is difficult for one author to deal with all the lesions for which the *Treponema pallida* may be responsible. For this reason collaboration is essential for the production of an all-round work on the subject, if it is to aim at being authoritative,—and the book under review can be thus regarded. The treatment of the subject is comprehensive, forming a source of reference for those searching for information on some of the less familiar manifestations of the disease.

The chapter on syphilis of the alimentary system contributed by Dr. Favre is especially interesting inasmuch as it treats of lesions, the syphilitic nature of which is frequently missed. In dealing with syphilis of the stomach, Dr. Favre recognises a great variety of forms ranging from a simple catarrh of the mucous membrane to extensive infiltrations, followed by marked deformities of that viscus. So different are these syphilitic lesions that diagnosis is naturally a matter of difficulty. For this reason the author offers the same advice as that proffered by Fournier—i.e., not to search for symptoms characteristic of gastric syphilis, but to bear in mind the possibility of syphilis whenever faced with gastric trouble of obscure origin. As confirmatory evidence the result of treatment is of even greater importance than the Wassermann reaction. It is the fact of such lesions passing so frequently unrecognised, and not their refractory nature, that renders gastric syphilis a serious complaint. Perforation is fortunately, according to the author, a rare complication; the same, however, cannot be said of pyloric obstruction and hæmorrhage. The section on syphilis of the heart and blood-vessels is contributed by Dr. P. Rostaine, and shows that a great advance has been made in the knowledge of syphilitic lesions of these structures since the first observation on the subject published by Ricord in 1845. The important question of syphilis of the central nervous system is discussed

by Dr. M. L. Babonneix. This section contains some excellent plates illustrating the pathology of tabes. The diagnosis and pathology of nervous syphilis claim the greater part of the section, the shortness of the paragraphs on treatment serving to emphasise the intractable nature of tabes and general paralysis. The work is illustrated but not lavishly. The volume is remarkably complete, but in a work of reference we should have welcomed the inclusion of a bibliography.

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THE OCTOCENTENARY OF READING ABBEY, A.D. 1121–1921.

By JAMIESON B. HURRY, M.A., M.D. London: Elliot Stock. 1921. Pp. 92. 10*s.* 6*d.*

Dr. Hurry is well known as a writer on archæology, and especially on the history of Reading Abbey. Most of his books are now out of print, and therefore, as he tells us in his preface, he has collected some scattered papers and bound them up in the volume before us as an eight hundredth "years mind" (to use the old technical expression) of the great Benedictine house at Reading. The volume is confessedly slight and sketchy, but there is more information in it than would at first appear from the size of the book, and we are glad to say there is an excellent index. Dr. Hurry gives particulars of the founder, Henry I., of the foundation itself, and of the daily round in a religious house. On p. 33 there is a statement which has somewhat puzzling features: "After chapter came the chapter Mass, followed by study or exercise, till the bell summoned to the office of Tierce; this in its turn was succeeded by the principal act of the day, the sacrifice of the Mass." In any religious house, whether monastic, collegiate, or a cathedral establishment, the principal service of the day is the chapter Mass, otherwise called capitular, or solemn, or conventual, or stational, or principal, or greater Mass. But the word Mass was anciently used to describe any office of simple praise and prayer which was concluded by the bishop with a *collectio*, or summing-up prayer, and possibly Dr. Hurry, when he refers to the Chapter Mass, means the office with which the chapter concluded. If he means the capitular Mass, the "principal act of the day" would not have followed, for the capitular Mass *is* the principal event.

We are quite at one with Dr. Hurry in his protest against the manner in which the monastic buildings and establishments were treated at the dissolution; he points out rightly that Reading Abbey Church might have been made a cathedral for the county of Berkshire, and the other buildings retained as a hospital or almshouse. The granting of the Church's lands and moneys to greedy courtiers, such as Somerset, who pulled down much of Old St. Paul's to build Somerset House and tried to pull down Westminster Abbey for the same purpose, or that wretched creature, Sir Richard Rich, to whom was granted St. Bartholomew the Great, was one of the worst features of the Reformation. It is true that the religious houses had in many cases fallen from their first estate—there could hardly be a more severe indictment than Cardinal Morton's of St. Alban's Abbey in 1489—but Cromwell and Henry VIII. had but one idea of reformation, and that was robbery accompanied by injustice. Here is Cromwell's note on the "trial" of the last Abbot of Reading: "The Abbot Redyng to be sent down to be tried and executed at Redyng with his complices."

Dr. Hurry's book contains some good illustrations, reproduced mainly from a series in the municipal Art Gallery. Plate IV. is a picture by Mr. Stephen Read, representing the Consecration of the Abbey Church by Thomas à Becket. Mr. Read's imaginary presentment of Becket represents a dreamy and delicate girl, totally unlike what that masterful personage must have been, though we believe that previous presentations have been similar in character; for an imaginary portrait of Becket we much prefer Tenniel's, as given in The Brothers of Birchington, known to all readers of "The Ingoldsby Legends."

CHEMISTRY.

*Dairy Chemistry.* A Practical Handbook for Dairy Chemists. Third Edition. By H. D. RICHMOND. London: Charles Griffin and Co. 1920. Pp. 490. 25*s.*

THIS well-known standard work was written for dairy chemists and others having the control of dairies. The fact that it has been necessary to prepare a third edition since 1915 is sufficient testimony to its value. It is a natural and healthy indication that a voluminous and ever-increasing literature centres around one of the staple foods of mankind, and Mr. Richmond's brother chemists should be grateful that he has found time not only to bring this book up to date, but to effect considerable improvements in the treatment of the several subjects dealt with. His book, which contains a number of useful illustrations, is now divided into three parts: the constituents of milk, the analysis of milk and milk products, and technical applications. That portion dealing with biological and sanitary matters will appeal to the medical officer. The writing is good and there appear to be very few mistakes. One small point which Mr. Richmond might consider in the next edition is the substitution of clear and well-defined illustrations for those which are blurred.

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*Aids to Chemistry.* By WILLIAM PARTRIDGE, F.I.C. London: Baillière, Tindall and Cox. 1921. Pp. 280. 6*s.*

THIS little book is intended for medical, veterinary, dental, and pharmaceutical students who have passed through a course of chemistry. One-fifth of the space is devoted to general considerations of chemistry, and the subjects dealt with include non-metallic elements, the commoner metals, carbon compounds, aliphatic compounds, cyanogen compounds, aromatic compounds, and heterocyclic compounds. The matter is judiciously selected, free from errors, and arranged in a convenient manner. Those who like to have their information in "tabloid" form will, no doubt, approve of Mr. Partridge's effort.

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BOTANY

*A Text-book of Botany for Medical and Pharmaceutical Students.* By JAMES SMALL, D.Sc. Lond., Ph.C., F.L.S. London: J. and A. Churchill. 1921. With 1350 illustrations. Pp. x. + 681. 25*s.*

THIS text-book of Botany provides reading sufficient to cover the work required for the examinations (qualifying and major) of the Pharmaceutical Society and also for the botanical syllabus of the medical curriculum. The volume carries us even beyond these limits, giving a careful reader an all-round acquaintance with botanical science, approximating to the requirements for a pass B.Sc. degree.

The subject is developed in a way that makes the book rather difficult reading for a beginner. After an introductory chapter describing briefly the life-history of a dandelion, seeds are discussed and the germination of typical examples is described. Then follows a chapter upon the cell, including all the intricate details of nuclear structure and division. Chapters on the morphology and anatomy of stem, root, and leaf follow in succession, Plant physiology occupies the next four chapters; then buds, phyllotaxis, the flower, pollination, fruits and seed dispersal. Permeability of the protoplasm, plant movements and ecology fill the closing chapters of Part I.

Part II. is concerned with classification and includes a description of all the great groups of plants beginning with the Algæ and proceeding to the Angiosperms. Types of these groups are not considered separately in detail, but examples are used to illustrate the general vegetative and structural features of the group as a whole, and the physiological peculiarities. Methods of sexual reproduction are next considered, followed by asexual reproduction, vegetative propagation, and classification. The method of treatment adopted by

the author results in a good general presentation of the characteristics of each group of plants, while the search for details relating to any given type is facilitated by the provision of an excellent index and by the illustrations. Plant physiology is dealt with along modern lines, special attention being directed to certain newer theories which the author regards as fundamental and therefore elementary (see Preface). We think, however, that in teaching the early stages of botany it is better to direct the attention of the student mainly to experimental methods, limiting the discussion of theoretical speculations at least to such views as have obtained a full measure of recognition. For the more advanced student the newer speculations have much interest, and these readers will welcome the useful summaries given in this text-book.

The volume is fully illustrated, the majority of the figures being good and clear. The floral diagrams of the family Liliaceæ (Figs. 1323 and 1330) are incorrectly placed with respect to the axis. Some of the diagrams seem to have only a remote connexion with the text, and one or two of them are rather overcrowded with detail. The book as a whole is a useful addition to English botanical literature and should find a place in the library of students taking a university course in this subject.

## JOURNALS.

*Journal of Physiology*. Edited by J. N. LANGLEY, Sc.D., LL.D., F.R.S. Vol. LV. 1921. Nos. 1 and 2. Cambridge University Press. Pp. 1–158. 14*s*.—The Substances needed for the Growth of a Pure Culture of *Colpidium Colpoda*, by R. A. Peters.—The Replacement of Potassium by Uranium in Perfusion of the Heart, by H. Zwardemaker. The author has already demonstrated that uranium or any other radio-active element can be substituted for potassium in Ringer's fluid in perfusion without disturbing the automaticity of the heart of the frog and the eel, provided that the amount of the element substituted is radio-equivalent to that of potassium in the fluid. The amount of uranium required for effective substitution in the frog is not the same in summer and winter—i.e., there are factors, with which the author deals, which increase or decrease the effect of radio-activity.

The Influence of Extension and Temperature on Heat Production in the Muscle Twitch, by Y. Doi. The author confirms the statement that heat production reaches a maximum at a certain moderate extension. Before this optimal length the heat production increases, and beyond this it decreases with increasing extension. The optimal extension of a muscle is shorter at a lower temperature than at a higher. The heat production is larger at a lower temperature than at a higher, except at very extreme extensions.—The Influence of an Acute Anoxic Anoxæmia on Respiration and Circulation, by the same author. The writer's experiments were carried out on cats anæsthetised with urethane. When the cat is subjected to an oxygen-pressure lower than that of the ordinary atmospheric air the volume of blood passing through both lungs per minute is the same as that when the breathed air is normal, regarding the hæmoglobin concentration as the same. After a short exposure to a low oxygen-pressure the cat takes up the same amount of oxygen as that in normal air. On an acute anoxic anoxæmia the volume of the respiration per minute increases. When the cat is exposed to a deficiency of oxygen the frequency of respiration and pulse increases, and the output of each heart beat decreases. The decrease of the percentage saturation of oxyhæmoglobin in the arterial and venous blood is nearly parallel in the state considered, so that the difference of oxygen content of the arterial and venous blood is fairly constant.

On the Amount of Heat Liberated by *Bacillus Coli* when Grown in the Presence of Free Amino-acids, by C. Shearer. It had been found that *B. coli* grown on various culture media produced little or almost no heat when grown on tryptic broth. This and other observations led to the author's experiments, with the result that he found that when *B. coli* is supplied with abundance of free amino-acids already prepared the process of building these into the living protoplasm is an extremely economical one, in which little energy is used. The process is three to eight times more effective than the growth of the same organism on glucose-peptone broth. Tryptic broth that has been digested for a short time (one week) produces considerably more heat with *B. coli* than the same broth digested for a long time (three to eight weeks). The difference would seem to be far too great to be accounted for by the extra hydrolysis the polypeptids had undergone in the three to eight weeks' fluid. The pathological process of metabolism, either with tryptic digest or in any other culture fluid, is always accompanied by a greater liberation of heat than is given by the same amount of growth on the same medium under normal healthy conditions; pathological growth is thus less economical than normal growth.

The Physiological Changes Produced by Radium Rays and Ultra-Violet Light in the Eggs of Nereis, by Alfred C. Redfield and Elizabeth M. Bright. It is already known that the exposure of the unfertilised eggs of *Nereis limbata* to the $\beta$ or $\gamma$ rays of radium brings about certain very definite changes in the process of membrane formation and jelly secretion which ensues when the eggs are subsequently fertilised. The authors set out to observe the effects of other kinds of radiation on this process, and the nature of the changes thereby produced in the egg, and to explain the specific differences in the effects of different radiations. Elaborate details are given in comparison of different kinds of radiation and as to the methods of obtaining the rays. It was found that $\alpha$ rays and ultra-violet light resemble $\beta$ and $\gamma$ rays in altering the process of membrane formation and jelly secretion in nereis eggs, but the process is unaffected by wave lengths of light shorter than 3000 A.V. The changes produced are limited to one side of the egg. Radiation alters the process of jelly secretion and membrane formation by causing a certain quantity of the jelly substance to be retained within the perivitelline space of the egg. The retention of the jelly substance is due chiefly to an alteration in its physical properties. There is no reason to believe that a change in the permeability of the membrane of the egg is an important factor in causing this retention. The differences in the effects of the radium rays and ultra-violet light on membrane-formation, on the induction of artificial parthenogenesis, and on the prevention of development are due to differences in the penetrating power of these radiations, and the failure of visible light to affect the egg is attributable to the limited absorption of those wave lengths by protoplasms. Since the change produced in the egg is simple in nature, it is justifiable to suspect that some common mechanism underlies the effects produced by these different radiations.

The Coagulation of the Blood. I. The Rôle of Calcium, by H. W. C. Vines. In all theories of coagulation the presence of calcium salts is recognised as an essential factor, and it is generally held that the activity of calcium depends on its presence in the ionised form. The author's experiments were made on normal human blood. He finds that calcium is present in normal blood in two forms, ionised and combined; the latter is transformed into the ionic state during coagulation. The addition of oxalate, citrate, or fluoride to normal blood in amount chemically equivalent to the total calcium of the blood does not inhibit coagulation; this indicates that the presence of ionised calcium is not essential to the clotting process. The anticoagulants described all inhibit clotting primarily by combining with the calcium-containing complex; the amount of anti-coagulant required to neutralise the action of the complex is in each case in excess of the chemical

equivalent of the calcium attached to it. Calcium, combined with an organic substance at present not defined, is the essential factor in the commencement of blood coagulation; this complex probably corresponds to the thrombokinase of Morawitz.

The Oxygen Use of Muscle and the Effect of Sympathetic Nerves on it, by Hiromu Nakamura. The author's results refer to the rate of blood flow and oxygen exchange in the muscles and bones of the lower leg of the cat. The rate of flow makes no difference to the rate of oxygen use, except when the flow becomes very small. Section of the sciatic nerve when the sympathetic is intact causes in anæsthetised animals, in harmony with the experiments of others, an increase in rate of blood flow. Such section does not cause decrease in oxygen use. Stimulation of the peripheral end of the lumbar sympathetic causes great decrease both in the rate of blood flow and in oxygen use; the latter is probably a consequence of the former. The author concludes that the sympathetic does not increase the oxygen use of muscles, and, in agreement with Frank and Voit (1901), that the ordinary (extensor) muscular tone kept up by somatic nerves does not increase oxygen use. The rate of blood flow and oxygen use, both in anæsthetised and in decerebrate-curarised animals, was found to be unaffected by section of the sympathetic nerves, and by section of the sciatic after the sympathetic nerves have been cut.

Effects on the Frog's Heart of Varying the Alkalinity and Calcium Content of the Perfusing Fluid, by W. Burridge. In perfusion experiments on the frog's heart the effect of alkali depends, within certain limits, on the amount of calcium. Similarly the effect of calcium depends on the amount of alkali.

The Regulation of the Water Content of the Human Organism, by Edward F. Adolph. The experiments were undertaken to define some of the conditions which determine the amount of water in the body, and to exhibit the normal adjustments of the body fluids; they were therefore made by introducing water and other substances into the circulation from the alimentary tract, and not by intravenous injections, as these present very unusual and drastic conditions to organs of regulation—particularly to the kidneys—or by curtailment of their introduction. The addition to the body of water alone, accompanied by salts or urea, is not permanent. The solution retained for the greatest length of time is 1 per cent. sodium chloride. Water may be abstracted from the body by a large variety of methods, several of which were studied comparatively—e.g., use of nutrients having small water content, chiefly meat, bread, butter, jam, cake, and sugar, with sweating and thirsting. When no other constituent has been abstracted meanwhile, the body-weight is completely restored by drinking water. Depletion in water does not inhibit process of growth. The excretion of water, chloride, and urea during a diuresis due to any one of them is by far the most accurate indication so far studied as to whether the water of the body is normal in quantity. The water content of the whole organism is independent of every other single substance. The content may be raised by introducing a temporary store of salt or carbohydrate; this water is not a part of the essential structure of the body. Other than this, no evidence has been found for a reserve of "free" water; in thirst the excretion of water is kept up at the expense of water from the tissues themselves.

The Regulation of the Supply of Energy in Muscular Contraction, by W. Hartree and A. V. Hill. The following are a few of the conclusions arrived at by the authors. A single maximal shock produces considerably more heat at a lower temperature; a tetanic stimulus of about 0·017 second duration produces practically the same heat at all temperatures. A longer stimulus produces far more heat at a higher temperature. In a contraction the heat produced is the sum of two factors, corresponding to the two functions of a muscle of maintaining a force and of doing work. Interesting details as to the heat produced per gramme of muscle per second of stimulus, per cm. length of muscle per gramme weight of tension maintained per second of stimulus, and of the "efficiency" of muscle and other results, for which reference must be made to the paper itself.

# New Inventions.

## AN IMPROVED ETHER INHALER.

THE old Junker inhaler, holding an ounce, or at most two ounces, of chloroform, was a satisfactory inhaler in the days before the objection to chloroform was recognised. Ether, however, which demands a 15 per cent. vapour, needs an apparatus correspondingly larger in size. The essential requirements of such an apparatus are that is should be not only simple and portable but perfectly safe. These essentials have been very satisfactorily combined in the apparatus which I here describe.

It consists of a strong glass jar with nickelled metal cap, carrying inlet and outlet tubes with a funnel between them for the introduction of fluid ether. It is graduated to one-third of its height to hold eight ounces of ether. The inlet is bifurcated, one branch for oxygen if required, the other for connexion to a simple hand bellows or to a foot bellows. The outlet tube carries a three-foot rubber tube for attachment to a face mask, or to a mouth tube, or gag. The danger of faulty adjustment and the blowing over of fluid ether has been fully met and countered by the use of two ball valves. They admit the passage of vapour in one direction only and faulty adjustment is at once apparent, for in this case the instrument would not work. The large splasher situated below the out-going tube effectually prevents any entrance of fluid ether. Again, the impossibility of fluid ether passing over is secured by the central position of the vapour outlet above the splasher, for in whatever position the bottle may be placed, upon its side or upside down, no fluid ether can possibly pass over. The apparatus is simple, safe, and even "fool-proof."

The chilling of ether fluid by the passage of air through it may be avoided by placing the bottle in an ordinary enamelled jug, one-third filled with hot water, or by using a leaden coil immersed in boiling water, placed between the air bellows and the ether bottle.

I have fully tested this apparatus and believe it will be found perfectly satisfactory. It should appeal to many who do not take kindly to the transport and haulage of the more complicated and ponderous plants of anæsthetic machinery. The apparatus has been made for me by Messrs. Allen and Hanburys, Ltd., Wigmore-street, W.

HEDLEY C. VISICK, M.R.C.S. Eng.,
L.R.C.P. Lond.

Hampstead.

Mr. Samuel Osborn, M.R.C.S. Eng., has received the King's permission to wear the Cross of Chevalier of the Order of the Crown, conferred upon him by the King of the Belgians in recognition of services to the Belgian sick and wounded in the late war.

# Public Health Services.

## ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

### *Colchester.*

IN Colchester the estimated population for 1920 was 43,007. The birth-rate has jumped from 16 to 22; there were 351 more infants born in Colchester in 1920 than in 1919. Dr. W. F. Corfield draws attention to two important statistical records—viz., a general death-rate of 10·3 and an infant mortality rate of 44·1. The death-rate from tuberculosis is 0·79 for pulmonary and 0·27 for other forms. Of the 47 deaths of infants under 1 year, no less than 25 were attributed to congenital debility and premature birth, showing that there is still room for improvement even with a rate of 44. Dr. Corfield suggests that the slaughter-house of the Coöperative Society should be used as a public abattoir and the other slaughter-houses closed. Food condemned in London as unfit for human consumption has recently been released for cattle or poultry feeding and sent to dealers who sold food for human consumption. "It would be more satisfactory if no dealer in human foodstuffs were allowed to receive condemned unsound food under any circumstances whatever."

The modified regulations for the notification of measles and whooping-cough came into force on April 1st, 1920, and Dr. Corfield thinks the result encouraging. Nursing assistance has been provided for severe cases. Dr. Corfield complains of patients being sent to sanatoriums under the county scheme with their teeth in a bad state. "It is wasting valuable time to send a man with a mouth full of carious teeth to a sanatorium in the hope of materially improving his health." The health visitors act as general health nurses and visit infants, school children, and cases of tuberculosis. Thus overlapping is avoided, and the health visitor has a chance of becoming a friend of the family. The antenatal clinic has made little progress as yet. "It is a definite drawback to the work that the borough council is not the supervising authority under the Midwives Act."

Five cases of ophthalmia neonatorum were notified. Four recovered without damage, but the fifth case resulted in complete loss of the sight in one eye and great diminution in the other. In 1919 it was estimated that 600 new houses were required. Under the council's scheme 28 have been completed and 50 are in course of erection. Overcrowding has to be regarded with a lenient eye. A number of old houses require renovation and some only deserve destruction, "but it is still necessary to leave such hovels standing and occupied until the time comes when house room is not so scarce as it is at the present time."

### *Margate.*

The Registrar-General's estimate of the population for 1920 is 23,243. The death-rate is given as 12·7, the birth-rate as 24·5, the tuberculosis death-rate as 1·4, and the infant mortality rate as 68. Dr. R. McCombe estimates the ordinary population at about 30,000—increased at the height of the season to about 100,000. The principal occupation is catering for visitors, and Dr. McCombe thinks many of the children attending the elementary schools are seriously neglected during the season. A new reservoir to hold 2,000,000 gallons has been approved. The water is from the chalk and of very high bacteriological purity. A considerable extension of the sewerage system has been rendered necessary owing to the extension of the borough. Six steam wagons have lately been purchased to facilitate scavenging. A motor ambulance is needed for the isolation hospital. Tuberculosis is under the care of the county council, and it is mentioned that "the accommodation for patients in sanatoriums is most inadequate." A new infant welfare centre, adapted from an army hut, was opened in September last. Five cases of ophthalmia neonatorum were notified and recovered without permanent injury to eyesight. There are three midwives in practice, two being municipal. "The two municipal midwives are paid a stated salary by the town council and the fees received from their patients are paid back into the borough fund" . . . . "The municipal midwives occupy their spare time in antenatal visiting." They attended 227 midwifery cases during the year.

The housing scheme of the council provides for 300 houses during the next three years. Only four are completed. Dr. McCombe says: "It would seem that some considerable time must elapse before the shortage of houses can be overcome, and it would also appear that the 300 houses to be built in the borough by the housing committee will not satisfy the present demand." In the meantime, there is difficulty in getting existing houses kept in good repair, and "standards are not quite so high as in pre-war days." The total hours of sunshine registered at Margate during 1920 were 1522.

### *Southwark.*

Dr. G. Millson states that the estimated population for 1920 was 187,142; the death-rate was 14·4 (2·0 above that of London), the birth-rate 31·8 (5·3 above that of London); the infant mortality rate was 86, the lowest on record. The death-rate from pulmonary tuberculosis was 1·3, while that for London was 1·01. As in other towns this rate went up during the war years and is now lower than before the war, Dr. Millson says: "Much poverty has existed in the borough during the year. Necessitous children and expectant mothers have received free milk to the extent of £1658 14*s.* 2*d.* The municipal nursery, which accommodates 45 infants, has been always full and four times the number accommodated have applied for admission." Southwark is usually overcrowded but has been more so than usual in 1920. "There are various large housing schemes before the council necessitating the clearance of upwards of 20 acres in the borough. These have been held up for a time partly on account of the inability to provide accommodation for the dislodged population and partly on account of the high price and the difficulty of obtaining building materials." There is no vacant land for building purposes in Southwark.

Very complete tables of statistics and of sanitary work done are submitted from which we extract a few items. The infant mortality rate among illegitimate infants was 156. There were 91 cases of ophthalmia neonatorum notified, but no mention is made of the amount of permanent damage to the eyes or loss of sight resulting therefrom. Of the 243 deaths from pulmonary tuberculosis 147, or 60·5 per cent., occurred in institutions. The hospital-treated diphtheria cases, 440 in number, had a case-fatality of 7·5 per cent., while 17 home-treated cases gave a case-fatality of 23·5 per cent. Dr. Millson advises that measles be again made notifiable. "The maternity and child welfare scheme is in full operation. Of the 14 centres existing at the present time, seven are entirely municipal, three partly municipal and partly voluntary, and four wholly voluntary."

### *Hove.*

In 1920 the population estimated for birth-rate was 46,204 and for death-rate 45,909; the birth-rate was 15·5: "the births always exceeded the deaths until 1913; in the years 1915 to 1919 the loss by excess of deaths over births was 380; in 1920 the births exceeded the deaths by 184." The death-rate was 11·65 and the infant mortality rate 48. "The most troublesome sanitary problem in recent years—viz., the disposal of house refuse—has at last been brought to a satisfactory solution, and the crusher works are in process of erection." "The erection of houses under the council's housing scheme has not yet begun, but this is not the fault of the council." Twenty-four new houses have been erected and 51 additional tenements provided by alteration of houses into flats. "There are many houses still overcrowded, but no other accommodation can be found."

# A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

## METEOROLOGICAL OFFICE: ADVISORY COMMITTEE ON ATMOSPHERIC POLLUTION: SUMMARY OF REPORTS FOR DECEMBER, 1920, AND JANUARY, FEBRUARY, MARCH, 1921.

### *December*, 1920.

| Place. | Rainfall in millimetres | Metric tons of deposit per square kilometre. Insoluble matter. Tar. | Insoluble matter. Carbonaceous other than tar. | Insoluble matter. Ash. | Soluble matter. Loss on ignition. | Soluble matter. Ash. | Total solids. | Included in soluble matter. Sulphate as ($SO_3$). | Included in soluble matter. Chlorine (Cl). | Included in soluble matter. Ammonia ($NH_3$). |
|---|---|---|---|---|---|---|---|---|---|---|
| ENGLAND. | | | | | | | | | | |
| London— | | | | | | | | | | |
| Meteorological Office ... ... ... | 44 | 0·20 | 2·32 | 4·53 | 1·38 | 1·93 | 9·36 | 0·94 | 1·00 | 0·12 |
| Archbishop's Park | 49 | 0·77 | 3·57 | 4·06 | 2·81 | 3·53 | 14·76 | 2·53 | 0·80 | 0·17 |
| Finsbury Park ... | 55 | 0·10 | 0·99 | 1·65 | 0·93 | 1·72 | 5·39 | 0·93 | 0·72 | 0·10 |
| Ravenscourt Pk. | 49 | 0·10 | 1·49 | 2·58 | 1·47 | 1·60 | 7·25 | 1·45 | 0·68 | 0·16 |
| Southwark Park | 47 | 0·87 | 5·89 | 5·37 | 1·77 | 3·01 | 16·91 | 1·61 | 0·83 | 0·20 |
| Victoria Park ... | 52 | 0·12 | 1·46 | 1·92 | 1·14 | 1·79 | 6·43 | 1·12 | 0·65 | 0·08 |
| Wandsworth Com. | 39 | 0·50 | 4·44 | 3·89 | 1·63 | 1·73 | 12·19 | 0·95 | 0·68 | 0·06 |
| Golden Lane ... | 50 | 0·09 | 3·54 | 4·19 | 2·19 | 4·78 | 14·78 | 2·10 | 1·17 | 0·24 |
| Birmingham— | | | | | | | | | | |
| Central ... ... ... | 60 | 0·10 | 3·62 | 6·92 | 1·61 | 4·42 | 16·67 | 2·34 | 0·47 | 0·12 |
| Aston ... ... ... | 56 | 0·06 | 2·00 | 3·67 | 1·41 | 2·60 | 9·74 | 1·63 | 0·28 | 0·06 |
| South-Western ... | 58 | 0·04 | 0·56 | 1·20 | 0·75 | 2·13 | 4·68 | 0·94 | 0·26 | 0·05 |
| Kingston-upon-Hull | 66 | 0·17 | 3·08 | 6·95 | 3·01 | 7·03 | 20·24 | 3·39 | 0·93 | 0·14 |
| Liverpool ... ... ... | 60 | 0·26 | 4·26 | 11·59 | 3·74 | 6·17 | 26·03 | 2·72 | 1·03 | 0·17 |
| Malvern ... ... ... | 69 | — | 0·15 | 0·64 | 0·72 | 2·49 | 4·00 | 0·79 | 0·12 | 0·02 |
| Newcastle-on-Tyne | 92 | 0·28 | 4·51 | 5·27 | 1·84 | 6·45 | 18·35 | 2·12 | 0·98 | 0·28 |
| Rochdale ... ... ... | 90 | — | — | — | — | — | 13·55 | — | — | — |
| Rothamsted ... ... | 49 | — | 0·61 | 0·83 | 0·69 | 3·02 | 5·15 | — | — | — |
| St. Helens ... ... ... | 69 | 0·13 | 2·53 | 2·94 | 1·55 | 5·35 | 12·51 | 1·54 | 1·79 | 0·01 |
| Southport— | | | | | | | | | | |
| Hesketh Park ... | 61 | 0·13 | 1·33 | 2·01 | 1·48 | 4·29 | 9·24 | 1·29 | 1·28 | 0·05 |
| Woodvale Moss ... | 39 | — | — | — | — | — | 6·25 | — | — | — |
| SCOTLAND. | | | | | | | | | | |
| Glasgow— | | | | | | | | | | |
| Alexandra Park ... | 74 | 0·15 | 1·44 | 3·53 | 1·08 | 2·35 | 8·55 | 1·22 | 0·77 | 0·10 |
| Bellahouston Pk. | 89 | 0·17 | 2·40 | 4·30 | 1·53 | 3·06 | 11·46 | 2·06 | 0·64 | 0·11 |
| Blythswood Sq. ... | 84 | 0·28 | 4·30 | 5·20 | 2·06 | 2·95 | 14·79 | 1·69 | 0·93 | 0·16 |
| Botanic Gdns. ... | 88 | 0·14 | 4.29 | 2·88 | 2·12 | 2·52 | 11·95 | 1·94 | 0·76 | 0·13 |
| Queen's Park ... | 85 | 0·14 | 1·45 | 2·23 | 0·99 | 1·80 | 6·61 | 1·36 | 0·57 | 0·06 |
| Richmond Park ... | 83 | 0·10 | 3·63 | 5·57 | 1·43 | 4·68 | 15·41 | 2·48 | 0·65 | 0·17 |
| Ruchill Park ... | 92 | 0·17 | 4·57 | 4·26 | 0·94 | 2·45 | 12·39 | 1·41 | 0·92 | 0·09 |
| Tolcross Park ... | 80 | 0·20 | 1·10 | 2·12 | 1·47 | 1·81 | 6·70 | 1·47 | 0·54 | 0·08 |
| Victoria Park ... | 94 | 0·15 | 2·38 | 3·54 | 1·14 | 3·19 | 10·40 | 1·76 | 0·76 | 0·16 |
| Stirling ... ... ... | 80 | 0.07 | 1·53 | 2·43 | 1·60 | 2·24 | 7·87 | 1·03 | 0·75 | 0·08 |

### *January*, 1921.

| Place. | Rainfall in millimetres. | Metric tons of deposit per square kilometre. Insoluble matter. Tar. | Insoluble matter. Carbonaceous other than tar. | Insoluble matter. Ash. | Soluble matter. Loss on ignition. | Soluble matter. Ash. | Total solids. | Included in soluble matter. Sulphate as ($SO_3$). | Included in soluble matter. Chlorine (Cl). | Included in soluble matter. Ammonia ($NH_3$). |
|---|---|---|---|---|---|---|---|---|---|---|
| ENGLAND. | | | | | | | | | | |
| London— | | | | | | | | | | |
| Meteorological Office ... ... ... | 32 | 0·17 | 1·26 | 3·19 | 0·44 | 0·71 | 5·77 | 0·46 | 0·33 | 0·05 |
| Archbishop's Park | 46 | 0·09 | 1·43 | 1·67 | 1·02 | 1·97 | 6·18 | 1·29 | 0·49 | 0·12 |
| Finsbury Park ... | 55 | 0·05 | 1·14 | 1·69 | 1·09 | 1·23 | 5·20 | 0·88 | 0·49 | 0·09 |
| Ravenscourt Pk. | 54 | 0·05 | 0·83 | 1·65 | 1·01 | 1·15 | 4·69 | 1·03 | 0·43 | 0·08 |
| Southwark Park | 38 | 0·24 | 2·45 | 4·20 | 1·30 | 1·39 | 9·58 | 1·06 | 0·43 | 0·09 |
| Victoria Park ... | 48 | 0·14 | 1·17 | 1·94 | 0·95 | 1·55 | 5·75 | 1·51 | 0·47 | 0·07 |
| Wandsworth Com. | 38 | 0·07 | 0·82 | 2·19 | 0·69 | 0·93 | 4·70 | 0·54 | 0·41 | 0·08 |
| Golden Lane ... | 51 | 0·05 | 2·57 | 3·40 | 0·81 | 3·66 | 10·49 | 1·65 | 0·86 | 0·11 |
| Birmingham— | | | | | | | | | | |
| Central ... ... ... | 58 | 0·12 | 2·12 | 8·43 | 1·28 | 3·62 | 15·57 | 1·85 | 0·35 | 0·12 |
| Aston ... ... ... | 52 | 0·11 | 1·38 | 4·15 | 0·99 | 2·89 | 9·52 | 1·29 | 0·29 | 0·05 |
| South-Western ... | 61 | 0·02 | 0·27 | 0·60 | 0·43 | 1·64 | 2·96 | 0·51 | 0·15 | 0·03 |
| Kingston-upon-Hull | 52 | 0·11 | 1·43 | 1·79 | 1·66 | 3·84 | 8·83 | 1·75 | 0·70 | 0·08 |
| Liverpool ... ... ... | 94 | 0·20 | 2·79 | 7·01 | 3·02 | 7·55 | 20·57 | 2·79 | 2·07 | 0·18 |
| Malvern ... ... ... | 72 | — | 0·10 | 0·25 | 0·39 | 1·67 | 2·42 | 0·59 | 0·13 | 0·01 |
| Newcastle-on-Tyne | 108 | 0·25 | 2·58 | 3·88 | 1·72 | 3·02 | 11·45 | 0·85 | 0·92 | 0·05 |
| Rochdale ... ... ... | 178 | — | — | — | — | — | 21·04 | — | — | — |
| Rothamsted ... ... | 60 | — | 0·37 | 0·43 | 0·71 | 2·84 | 4·35 | — | — | — |
| St. Helens ... ... ... | 103 | 0·12 | 3·26 | 2·32 | 1·73 | 4·47 | 11·90 | 1·52 | 1·55 | 0·005 |
| Southport— | | | | | | | | | | |
| Hesketh Park ... | 105 | 0·11 | 0·63 | 0·80 | 1·84 | 4·74 | 8·12 | 1·45 | 1·37 | 0·02 |
| Woodvale Moss ... | 82 | — | — | — | — | — | 8·34 | — | — | — |
| SCOTLAND. | | | | | | | | | | |
| Glasgow— | | | | | | | | | | |
| Alexandra Park ... | 134 | 0·08 | 1·17 | 2·46 | 2·39 | 2·80 | 9·90 | 2·67 | 1·49 | 0·27 |
| Bellahouston Pk. | 134 | 0·08 | 0·65 | 1·27 | 2·64 | 3·07 | 7·71 | 1·82 | 1·37 | 0·21 |
| Blythswood Sq. ... | 125 | 0·16 | 1·28 | 3·60 | 1·58 | 3·95 | 10·57 | 2·74 | 1·26 | 0·22 |
| Botanic Gdns. ... | 129 | 0·02 | 2·39 | 2·09 | 0·46 | 7·70 | 12·66 | 1·46 | 1·07 | 0·23 |
| Queen's Park ... | 133 | 0·09 | 0·68 | 1·14 | 1·92 | 6·97 | 10·80 | 2·13 | 1·09 | 0·23 |
| Richmond Park ... | 135 | 0·05 | 1·15 | 2·30 | 1·16 | 6·58 | 11·24 | 2·41 | 1·24 | 0·26 |
| Ruchill Park ... | 132 | 0·08 | 0·95 | 1·68 | 1·35 | 5·63 | 9·69 | 2·10 | 0·83 | 0·20 |
| Tolcross Park ... | 133 | 0·08 | 0·99 | 2·23 | 1·27 | 7·45 | 12·02 | 2·65 | 1·19 | 0·27 |
| Victoria Park ... | 128 | 0·09 | 0·95 | 1·77 | 1·64 | 7·65 | 12·10 | 1·62 | 1·23 | 0·20 |

### *February*, 1921.

| Place. | Rainfall in millimetres. | Metric tons of deposit per square kilometre. Insoluble matter. Tar. | Insoluble matter. Carbonaceous other than tar. | Insoluble matter. Ash. | Soluble matter. Loss on ignition. | Soluble matter. Ash. | Total solids. | Included in soluble matter. Sulphate as ($SO_3$). | Included in soluble matter. Chlorine (Cl). | Included in soluble matter. Ammonia ($NH_3$). |
|---|---|---|---|---|---|---|---|---|---|---|
| ENGLAND. | | | | | | | | | | |
| London— | | | | | | | | | | |
| Meteorological Office ... ... ... | 6 | 0·15 | 1·23 | 3·43 | 0·77 | 1·21 | 6·79 | 0·51 | 0·38 | 0·04 |
| Archbishop's Park | 5 | 0·03 | 0·19 | 0·48 | 0·79 | 1·63 | 3·12 | 0·93 | 0·22 | 0·02 |
| Finsbury Park ... | 7 | 0·08 | 0·76 | 2·71 | 0·68 | 1·22 | 5·45 | 0·58 | 0·23 | 0·02 |
| Ravenscourt Pk. | 4 | 0·09 | 0·80 | 2·46 | 0·64 | 0·90 | 4·89 | 0·75 | 0·17 | 0·02 |
| Southwark Park | 6 | 0·20 | 1·51 | 1·68 | 0·91 | 1·50 | 5·80 | 0·79 | 0·23 | 0·02 |
| Victoria Park ... | 6 | 0·07 | 1·12 | 2·45 | 0·62 | 0·90 | 5·14 | 0·49 | 0·02 | 0·01 |
| Wandsworth Com. | 4 | 0·05 | 1·02 | 1·67 | 1·02 | 1·23 | 4·99 | 0·69 | 0·32 | 0·04 |
| Golden Lane ... | 6 | 0·05 | 2·26 | 2·94 | 0·59 | 2·18 | 8·02 | 0·87 | 0·36 | 0·06 |
| Birmingham— | | | | | | | | | | |
| Central ... ... ... | 3 | 0·12 | 2·84 | 9·18 | 0·80 | 2·10 | 15·04 | 1·10 | 0·15 | 0·01 |
| Aston ... ... ... | 5 | 0·07 | 1·53 | 5·73 | 0·51 | 1·30 | 9·14 | 0·65 | 0·08 | 0·01 |
| South-Western ... | 4 | 0·05 | 0·62 | 2·28 | 0·28 | 0·90 | 4·13 | 0·44 | 0·06 | 0·01 |
| Kingston-upon-Hull | 8 | 0·08 | 2·22 | 3·82 | 1·12 | 2·98 | 10·22 | 1·32 | 0·38 | 0·03 |
| Liverpool ... ... ... | 8 | 0·14 | 1·84 | 4·60 | 2·34 | 5·06 | 13·98 | 2·61 | 0·67 | 0·06 |
| Malvern ... ... ... | 5 | — | — | — | — | — | — | — | — | — |
| Newcastle-on-Tyne | 3 | 0·25 | 2·27 | 6·61 | 0·52 | 0·93 | 10·58 | 0·52 | 0·15 | 0·01 |
| Rochdale ... ... ... | 16 | — | — | — | — | — | 11·57 | — | — | — |
| Rothamsted ... ... | 5 | — | 0·30 | 0·40 | 0·75 | 1·89 | 3·34 | — | — | — |
| St. Helens ... ... ... | 8 | 0·05 | 1·42 | 2·09 | 0·48 | 1·42 | 5·46 | 0·53 | 0·37 | 0·03 |
| Southport— | | | | | | | | | | |
| Hesketh Park ... | 7 | 0·003 | 0·17 | 0·20 | 0·22 | 0·40 | 0·99 | 0·13 | 0·10 | 0·003 |
| Woodvale Moss ... | 18 | — | — | — | — | — | 1·99 | — | — | — |
| SCOTLAND. | | | | | | | | | | |
| Glasgow— | | | | | | | | | | |
| Alexandra Park ... | 17 | 0·09 | 0·66 | 1·19 | 0·87 | 1·48 | 4·29 | 0·70 | 0·27 | 0·03 |
| Bellahouston Pk. | 23 | 0·13 | 0·61 | 1·19 | 0·91 | 1·42 | 4·26 | 0·63 | 0·24 | 0·03 |
| Blythswood Sq. ... | 21 | 0·10 | 2·19 | 3·57 | 0·94 | 2·06 | 8·86 | 1·20 | 0·27 | 0·08 |
| Botanic Gdns. ... | 23 | 0·12 | 1·16 | 2·09 | 1·05 | 1·60 | 6·02 | 0·70 | 0·18 | 0·03 |
| Queen's Park ... | 19 | 0·09 | 1·07 | 2·20 | 0·65 | 0·43 | 4·44 | 0·54 | 0·15 | 0·04 |
| Richmond Park ... | 19 | 0·13 | 2·10 | 3·43 | 1·16 | 1·88 | 8·70 | 1·27 | 0·22 | 0·08 |
| Ruchill Park ... | 27 | 0·12 | 1·34 | 2·03 | 0·79 | 1·50 | 5·78 | 0·79 | 0·25 | 0·07 |
| Tolcross Park ... | 14 | 0·18 | 1·66 | 3·00 | 2·73 | 1·28 | 8·85 | 0·80 | 0·16 | 0·03 |
| Victoria Park ... | 26 | 0·08 | 2·47 | 1·97 | 0·74 | 1·35 | 6·61 | 0·69 | 0·19 | 0·05 |

### *March*, 1921.

| Place. | Rainfall in millimetres. | Metric tons of deposit per square kilometre. Insoluble matter. Tar. | Insoluble matter. Carbonaceous other than tar. | Insoluble matter. Ash. | Soluble matter. Loss on ignition. | Soluble matter. Ash. | Total solids. | Included in soluble matter. Sulphate as ($SO_3$). | Included in soluble matter. Chlorine (Cl). | Included in soluble matter. Ammonia ($NH_3$). |
|---|---|---|---|---|---|---|---|---|---|---|
| ENGLAND. | | | | | | | | | | |
| London— | | | | | | | | | | |
| Meteorological Office ... ... ... | 29 | 0·24 | 1·16 | 3·85 | 1·11 | 1·06 | 7·42 | 0·60 | 0·71 | 0·05 |
| Archbishop's Park | 26 | 0·11 | 3·48 | 4·49 | 1·25 | 2·13 | 11·46 | 1·26 | 0·59 | 0·10 |
| Finsbury Park ... | 26 | 0·11 | 1·20 | 3·86 | 0·70 | 0·91 | 6·78 | 0·50 | 0·48 | 0·09 |
| Ravenscourt Pk. | 28 | 0·18 | 1·93 | 6·61 | 0·89 | 1·41 | 11·02 | 0·74 | 0·43 | 0·09 |
| Southwark Park | 25 | 0·56 | 5·80 | 11·87 | 1·42 | 2·65 | 22·30 | 1·18 | 0·51 | 0·11 |
| Victoria Park ... | 26 | 0·17 | 1·85 | 4·36 | 0·94 | 1·20 | 8·52 | 0·66 | 0·44 | 0·07 |
| Wandsworth Com. | 21 | 0·85 | 1·79 | 3·72 | 0·89 | 1·03 | 8·28 | 0·46 | 0·60 | 0·07 |
| Golden Lane ... | 25 | 0·05 | 2·52 | 3·75 | 1·12 | 2·13 | 9·57 | 0·86 | 0·81 | 0·09 |
| Birmingham— | | | | | | | | | | |
| Central ... ... ... | 27 | 0·14 | 2·46 | 7·90 | 1·29 | 2·88 | 14·67 | 1·19 | 0·32 | 0·08 |
| Aston ... ... ... | 26 | 0·11 | 1·89 | 9·24 | 0·89 | 2·29 | 14·35 | 1·02 | 0·24 | 0·05 |
| South-Western ... | 31 | 0·02 | 0·55 | 3·13 | 0·41 | 1·78 | 5·89 | 0·70 | 0·11 | 0·03 |
| Kingston-upon-Hull | 25 | 0·12 | 1·29 | 3·73 | 0·95 | 3·37 | 9·46 | 1·77 | 0·55 | 0·08 |
| Liverpool ... ... ... | 52 | 0·20 | 3·10 | 6·07 | 1·76 | 4·66 | 15·79 | 2·10 | 7·35 | 0·05 |
| Malvern ... ... ... | 51 | — | 0·13 | 0·28 | 0·54 | 1·77 | 2·72 | — | — | — |
| Newcastle-on-Tyne | 21 | 0·17 | 2·88 | 7·41 | 0·75 | 1·62 | 12·83 | 0·76 | 0·35 | 0·06 |
| Rochdale ... ... ... | 95 | — | — | — | — | — | 18·34 | — | — | — |
| Rothamsted ... ... | 25 | — | 0·46 | 0·61 | 1·06 | 2·11 | 4·24 | — | — | — |
| St. Helens ... ... ... | 48 | 0·11 | 2·40 | 3·65 | 0·96 | 2·19 | 9·31 | 0·94 | 0·72 | 0·01 |
| Southport— | | | | | | | | | | |
| Hesketh Park ... | 70 | 0·03 | 0·29 | 0·45 | 1·58 | 1·62 | 3·97 | 0·41 | 1·12 | 0·003 |
| Woodvale Moss ... | 59 | — | — | — | — | — | 3·23 | — | — | — |
| SCOTLAND. | | | | | | | | | | |
| Glasgow— | | | | | | | | | | |
| Alexandra Park ... | 100 | 0·08 | 1·13 | 2·08 | 2·07 | 2·32 | 7·68 | 1·44 | 0·83 | 0·18 |
| Bellahouston Pk. | 115 | 0·05 | 0·55 | 1·40 | 3·33 | 3·75 | 9·08 | 2·09 | 0·76 | 0·13 |
| Blythswood Sq. ... | 109 | 0·14 | 2·31 | 4·10 | 1·88 | 3·07 | 11·50 | 3·08 | 0·88 | 0·17 |
| Botanic Gdns. ... | 113 | 0·12 | 1·21 | 2·38 | 1·99 | 3·39 | 9·09 | 1·74 | 0·70 | 0·19 |
| Queen's Park ... | 104 | 0·07 | 0·58 | 1·62 | 1·06 | 2·63 | 5·96 | 1·18 | 0·58 | 0·10 |
| Richmond Park ... | 121 | 0·12 | 1·86 | 3·13 | 2·26 | 3·52 | 10·89 | 1·82 | 0·79 | 0·18 |
| Ruchill Park ... | 107 | 0·09 | 1·58 | 2·48 | 2·28 | 3·44 | 9·87 | 1·48 | 0·77 | 0·15 |
| Tolcross Park ... | 105 | 0·07 | 1·61 | 2·70 | 3·61 | 5·15 | 13·14 | 1·83 | 0·65 | 0·11 |
| Victoria Park ... | 107 | 0·06 | 0·52 | 1·18 | 2·11 | 3·22 | 7·09 | 1·70 | 0·64 | 0·12 |

"Tar" includes all matter insoluble in water but soluble in $CS_2$. "Carbonaceous" includes all combustible matter insoluble in water and in $CS_2$. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) 1 g. per sq. metre; (*d*) 1/1000 mm. of rainfall.

The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables.

# THE LANCET.

*LONDON: SATURDAY, JULY 23, 1921.*


## Opening of the B.M.A. Meeting.

THE second annual meeting of the British Medical Association to be held under post-war conditions is drawing to a close. It has been a notable gathering in many respects, and especially in its tacit recognition of medicine as an integral part of human life and endeavour. At the opening session of the business meeting the Lord Mayor of Newcastle-on-Tyne, in welcoming the medical profession to the metropolis of the North, compared the present gathering with the previous Newcastle meeting of 1893, calling attention to the closer grip of medicine on public affairs which has come about in the intervening 30 years. And Dr. T. W. H. GARSTANG, in reply, foreshadowed still further and swifter change in the years immediately ahead of us. The public addresses were in the same strain, for Prof. DAVID DRUMMOND, President this year, devoted half of his opening address to the relation of the doctor to the public, recognising in no carping spirit how much still remains to make this relation a perfect one. "We are a scientific and progressive profession," claimed Dr. DRUMMOND, but immediately asked, "Can we do more than we are doing, and thus progress more rapidly?" He then gave his reasons for thinking that such progress consists in increase of knowledge and its wider diffusion, and that, as these occur, the position of medicine in the State will be recognised at its true value. And finally Sir THOMAS OLIVER dealt with the boundless possibilities, as yet almost untouched, of industrial hygiene. Sky and street and factory revealed to the stranger in Newcastle that much satisfaction awaits the unflinching application of medical science—even the knowledge which we already possess—to the daily civic life.

The business meeting was notable for two decisions likely to have marked repercussion on affairs outside. A recent case of violation of professional secrecy in a civil court had focussed attention on a question already burning brightly at the Cambridge meeting. Representatives were all but unanimous in going far beyond the recommendations of their Council in asking the Association to use all its power to support a member who refuses to divulge, without the patient's consent, information obtained in the exercise of his professional duties. It was admitted that on occasion such refusal may result in making criminal conduct more difficult to detect—at any rate cases were cited where this might occur—but substantial benefit to the public accrues from the sense of security given by the Hippocratic oath; thousands of venereal cases might, it is alleged, forgo treatment altogether rather than run the risk of betrayal, and there was no doubt in the meeting as to the balance on the profit and loss account. Reduced to this simple proposition no difficulty is likely to occur in practice. As it is the lawyer and the priest are not protected by statute, but no one questions the lawyer as to what the prisoner has told him and the priest would be punished for divulging. Possibly the General Medical Council might assist by offering to remove from the official register the name of any practitioner who laid bare his patient's secrets on the invitation of a judge. Short of this, the medical man's disability, as it might be called, would soon become generally accepted, and instead of attempting to extract evidence from him on duress, against his regard for professional honour, the prosecution would explore other if less direct and easy channels. Medical evidence as soon as it begins to deal with clinical opinion has always proved difficult to handle in a court of law; a consultation on a case may be trying even for a medical panel. And it can hardly be to the detriment of justice if for the present the value of the Wassermann test and the differential features of the spirochæte group are ruled out of court. Another year must, however, pass before this decision of the Representative Meeting can become the considered policy of the British Medical Association, and no doubt the medical Members of Parliament will assist the Council of the Association in finding the best means of reconciling medical and legal views to the benefit of the community.

The other decision was definitely to close the door just left ajar at Cambridge last year, on the affiliation of the Association with any non-medical bodies. The value of identity and individuality was felt to be so great an asset that no weakening of these attributes could be admitted for the sake of speaking to the Minister of Health with the united voice of all the health interests. Naturally it was not intended thereby to rule out the benefit of threshing out certain mutual difficulties before presentation. Public men were regarded as being duly impressed by the large individual membership of the Association and the means taken under its present constitution of obtaining a representative opinion. Federation with any other medical bodies, apart from the overseas branches, was not ruled out, but the time was held to be inopportune for considering the matter. Both these decisions were taken, as we have indicated, after full discussion and with a strong sense of responsibility.

## Compulsory Measures against the Tuberculous.

NEXT week, July 26th, 27th, and 28th, a Conference of the International Union against Tuberculosis will be held in London at the Institution of Civil Engineers, Westminster. One of the subjects for discussion is the prevention of spread of infection. Of the many paths that may lead to this goal, most are still practically unexplored, and among these is compulsory segregation. This is being preached by a certain section of the medical profession as the surest means towards stamping out tuberculosis. As this proposal involves encroaching on the liberty of the individual, we should do well to scrutinise it carefully, and from every possible aspect before we commit ourselves to it. In a recently published book on tuberculosis a well-known medical author has written: "Segregation of dangerous cases must somehow be effected." Now, what are "dangerous cases," and what proportion of the whole community do they represent? An answer may be found in one or other of the following calculations. In 1919 there were 46,312 deaths in England and Wales from all forms of tuberculosis. Assuming that 10 active, living cases of tuberculosis exist for each annual death, we obtain a total of 463,120 more or less "dangerous cases." Is the nation prepared to lock up nearly half a million persons in the by no means sure hope of stamping out

tuberculosis for all time? It is probable that we have underestimated the numbers concerned, for in addition to the figures given, thousands of new cases would continue to be added annually to the lists of candidates for segregation.

Another calculation may be based on the opinion of no less an authority on tuberculosis than CALMETTE. He has recently expressed the view that everyone who reacts to the tuberculin test—even though apparently healthy—is an intermittent spreader of tubercle bacilli, the more dangerous because unsuspected. The overwhelming majority of the adult population of civilised communities being tuberculin-positive, we are faced with the comic-opera problem of locking up more than 90 out of every 100 adults. Even the most fanatical advocates of segregation must experience some diffidence when the problem is seen from this point of view. To distinguish between the various degrees of "dangerousness" among the tuberculin-positive would be an invidious task, leading to unfair discrimination as between rich and poor. For a patient's banking account must affect his classification as "dangerous" or "safe," and any legislation conferring summary powers over the tuberculous would create violent opposition from the bulk of a community. It has been facetiously, but with quite sound logic, suggested that if the "segregationist" must have his way and part the tuberculin-positive from the tuberculin-negative, it would be simpler for the majority—i.e., the tuberculin-positive to remain at home, and for the minority to be removed to some hypothetical place of safety. This suggestion may seem paradoxical and fantastic, but has not the principle of segregation of the non-tuberculous already been put into practice? Is not this the principle adopted consciously or unconsciously whenever a slum child is given a holiday in the country? It is amazing to find the success achieved by the segregation of lepers in Norway seriously cited as an argument in favour of segregating consumptives. Considerably less than 1 per cent. of the population in Norway being lepers it was comparatively easy to control this small minority. In the case of tuberculosis, however, this proportion is reversed, and the tuberculin-positive are in a majority whose exclusion from the community is impossible. In many points the comparison with leprosy is misleading, and we should temper our judgment of KOCH'S patronage of this analogy by the reflection that it dated from a time when tuberculosis was still regarded as a weed with comparatively short roots. Thanks to v. PIRQUET, we no longer measure the disease only in terms of months and years; we think in decades. Indeed, some of the factors determining the outbreak of active tuberculosis would appear to be traceable to a "tuberculous tendency" in certain of our ancestors. Confining ourselves to the present generation we find a disease running for a long time a clinically, but not necessarily a bacteriologically, subterranean course. Sometimes, indeed, quite often, the patient lives with his disease for more than 50 years, during which he intermittently disseminates tubercle bacilli. The few months he may take to die in an isolation hospital are but a brief fraction of his sputum-positive career. Without hospital segregation he would die in the home in which he had done all the harm his disease was capable of doing long before his working capacity broke down.

Before we commit ourselves to a policy of compulsory segregation, we should do well to weigh the extent to which it would force the disease into subterranean channels, and prevent that early diagnosis which every one familiar with this disease considers the first essential to successful treatment. The subject is not one for dogmatic pronouncements, but we have a shrewd suspicion that if tuberculosis comes to be regarded by the working classes as a legalised reason for compulsory breaking up of their homes, they will take every possible step to evade early diagnosis and the treatment which may terminate in segregation. And if tuberculosis comes to earn the unenviable stigma of such hidden diseases as syphilis and gonorrhœa, we may rest assured that its conquest has been deferred for many a day. We do not know what view the Conference will take of these complicated problems, but they will do well to approach them, not in the well-meaning but primitive lock-'em-up spirit of the policeman, but with a statesmanlike grasp of the many considerations that must be taken into account.

## The Resurrection Man.[1]

BURKE and HARE were murderers, of whom the former was hanged at Edinburgh on Jan. 28th, 1829, and the latter, having been called as a witness by the Crown, escaped trial. They were not body-snatchers or resurrectionists, Mr. ROUGHEAD points out, and there is nothing to show that they had ever even attempted that gruesome occupation. They had done what the body-snatcher did for the anatomist, by bringing bodies to his lecture room in days when the necessity for instruction in anatomy was recognised as part of the medical curriculum, but when the law made practically no provision for a supply of subjects. BURKE and HARE, however, did not rob graves of the dead. They suffocated the living, after fuddling them with drink, packed their bodies in boxes before they were stiff, and delivered them almost before they were cold at "Dr. Knox's Rooms for Practical Anatomy," 10, Surgeons' Square. The prices paid ranged up to £10 per body, which was the usual sum, and at least 16 subjects had been supplied by these miscreants within a space of nine months before an honest labourer and his wife, lodging at BURKE'S, and probably destined for death themselves, found the body of old MARY DOCHERTY lying naked under the filthy straw of the bed, and informed the police. With moderate promptitude, but with no great alacrity and no noteworthy insight into the possibilities of the case, the police began inquiries which resulted in the arrest of the right persons, BURKE, HARE, and two female associates of the criminals. The full measure of the iniquity of the gang was not revealed until HARE was sure of his escape as King's Evidence, and even so may never have been wholly discovered. The trial, with its legal argument on the relevancy of an indictment charging three separate murders, and as to how far the accomplice HARE might be cross-examined at Scots law with regard to his own crimes, contains several points of interest to a historian studying the growth of the criminal law. In medical history it occupies an even more important place. The horror it aroused secured the passing of legislation to prevent, so far as possible, the recurrence of the crimes which it revealed, by stimulating into action a legislature which had been fully aware of the needs of science, and had left them to be catered for by the resurrectionist.

THE LANCET had done its full share in calling attention to the requirements of the anatomical

[1] Burke and Hare, Notable Trials Series, edited by William Roughead, author of "Twelve Scots Trials," &c. 1921. London and Edinburgh: William Hodge and Company, Ltd. Pp. 280. 10*s*. 6*d*.

schools and the way in which they were being met. In a leading article,[2] published when BURKE and HARE were actually committing their last murders, we commented upon a case of body-snatching then recently tried at Norwich.

"Body-snatching is no doubt a disgusting offence, and not the less disgusting because rendered necessary by the state of the law regarding anatomical dissection."

We protested also against the sentence of hanging being coupled with an order that the body of the culprit should be dissected.

"Let the legislature repeal that provision in our statute book which associates the idea of dissection with that of punishment for crime."

Within six months of these sentences being printed BURKE had been hanged and his body dissected, after lying in gruesome state for thousands of visitors to inspect at the anatomical theatre to which it was consigned. Later we pointed out that either bodies must be provided in a manner acceptable to public sentiment, or dissection must be forbidden. The present laws, under which, it may be added, there is no plentiful supply of subjects, followed. The knowledge that we possess of this important epoch in the story of medical education is scattered through many books, pamphlets, and newspapers, and no better editor could have been chosen than Mr. ROUGHEAD to condense the information available within the limits of his recently published volume. The nine chapters of his introduction are convincingly lucid and judicial, and he appears to state nothing that is not well authenticated. The chapter which deals with "the body-snatchers" is medical history, not merely because the horrible trade of the professional resurrectionist provided subjects for dissection, but because medical students of that day, led away by zeal on behalf of their schools, vied with the professional, took the same risks in providing "subjects," and incurred the same odium.

The question arose of how far Dr. ROBERT KNOX, an able teacher, but with no very high reputation outside the circle of his pupils, may have suspected the source from which his lecture room was being supplied, and may deliberately have shut his eyes and asked no questions. Only one of the three cases charged in the indictment was tried. If that of MARY PATERSON, or "Daft Jamie," had been taken instead, or if there had been an acquittal in the first case, KNOX would inevitably have been called as a witness and so would his three assistants, one of whom as Sir WILLIAM FERGUSSON, Bart., F.R.S., was destined to be President of the Royal College of Surgeons of England. It is difficult not to acquiesce in the view which Mr. ROUGHEAD so temperately puts forward. Two men unconnected with the recognised resurrectionists sold to KNOX in nine months 16 absolutely fresh corpses, none of which had been buried or presented any appearance of death from natural disease. They had all been killed in the same way, the murderer lying on the victim's body and compressing with his hands the nose and mouth. They were examined at once to see if they were suitable for purchase, and they were afterwards dissected. The evidence of criminal handling may not have been conspicuous. KNOX would seem to have made no inquiry as to how the bodies, which arrived so opportunely and at such short intervals, were obtained. Had he no suspicion? Although no inquiry that can be called conclusive was ever held, the medical profession and the public formed their own opinion, and he found his position as a teacher gone. The boys in the street sang: "Burke's the butcher, Hare's the thief, Knox the boy that buys the beef." KNOX quitted Edinburgh and died in obscurity. Those who read Mr. ROUGHEAD's book are invited to note the dates given, when they will find it difficult to realise how recent are the almost unbelievable events that he recalls. It was less than a hundred years ago that the resurrectionists carried on their horrible trade, and BURKE and HARE trafficked in the corpses of their victims. The Anatomy Act of 1832, which recognised the needs of science and rendered body-snatching unprofitable, was passed by legislators who should have grandsons, at any rate, now living. Among members of the medical profession who have passed middle age must be some who lived in London when KNOX was ending his days in poverty at Hackney. Any of these as a child may have had pointed out to him by his nurse in Oxford-street the sightless beggar who by repute was HARE, blinded through being thrown into a lime pit by his indignant fellow workmen.

[2] THE LANCET, 1827–1828, vol. ii., p. 659.

## MEDICO-PSYCHOLOGICAL ASSOCIATION: ANNUAL DINNER.

ON June 13th the annual dinner of the Medico-Psychological Association of Great Britain and Ireland was held. About 150 members and guests of both sexes were present, and the function was successful not only as a reunion of medical officers engaged in the study of psychological medicine, but as a gathering at which representatives of diverse branches of one great profession met as host and guest. Dr. Hubert Bond, the president of the Association, was in the chair, and the many distinguished guests included the Chief Medical Officer of the Ministry of Health, the secretary of the Medical Research Council, the presidents of the Medico-Legal Society, the Royal Society of Medicine, the Eugenics Education Society, the Society of Medical Officers of Health, the Medical Society of London, the Federation of Medical and Allied Societies, the Director-General of the Navy and of the Army Medical Services, the Vice-Chancellor of London University, while a large number of distinguished alienists acted as hosts. The non-medical guests included also the Lord High Chancellor and the chairman of the Shell-Shock Committee. The occasion was unique in that never before, during the 80 years existence of this Association, has its president been an active Commissioner in Lunacy, though more than one president has subsequently become a Commissioner. The occasion marks the good feeling that exists between the Board of Control and those engaged in work in mental hospitals, and Dr. Bond's year of office as president should serve to maintain and increase these friendly relations. It also, we hope, will mark that modification of the lunacy laws in the interests of recoverable cases, the need for which Dr. Bond has ably pointed out.

MINING DANGERS RESEARCH BOARD.—Mr. W. C. Bridgeman, Secretary for Mines, has announced the appointment of a Mining Dangers Research Board to direct the research work of the Mines Department into the causes of mining dangers, and to reorganise the existing arrangements for such research at the Mines Department Experimental Station. The members of the Board are: Mr. W. Walker, Director of the Health and Safety Division, Mines Department (chairman); Mr. T. H. Mottram, Chief Inspector of Mines; Sir R. A. S. Redmayne; Mr. Thomas Richards; and Prof. R. V. Wheeler, director of the Mines Department Experimental Station. The Board will have the assistance of Sir Walter Fletcher, and Dr. C. H. Lander, assessors appointed by the Medical Research Council and the Scientific and Industrial Research Department respectively.

# Annotations.

"Ne quid nimis."

## MINISTRY OF HEALTH: ANNUAL REPORT OF THE CHIEF MEDICAL OFFICER.

THE annual report of Sir George Newman, the Chief Medical Officer of the Ministry of Health, for the year 1920 was published this week, and, considering the importance and variety of the matter to be reviewed, its date of issue is a remarkably prompt one. The document is a less bulky one than that published last year, when the machinery of the Ministry came in for description. It deals comprehensively and in a popular manner with the state of public health during 1920, as revealed by official statistics and by the work and records of the Ministry, and a summary has been distributed to the lay press; this has proved a judicious course of procedure, for in this way the medical history of the year has been revealed in brief to all. That history reveals no alarming epidemic nor any decline from a steady improvement in general health. Sir George Newman is insistent upon two points as the basis of ministerial policy: consolidation and strict economy. Every pound expended on our medical services must be made to yield the full value of a pound. A rise in birth-rate, a fall in infant mortality, an almost negligible notification of smallpox, absence of alarming epidemics, and a decline in tuberculosis are cheering pieces of information to be found in the report.

With regard to V.D. the report recalls the fact that the policy of the Ministry is based largely on the findings of the Royal Commission of 1916; confidential registration of the cause of death has not been found possible, but the other important recommendations of the Commission have been carried out. The effect of communal action is thus stated:—

(1) There were a total number of new cases treated in clinics (including non-venereal cases) of 103,000. The total number of attendances was 1,488,000.
(2) The rapid rise of "new" cases in 1918–1919 did not continue. The number (quite untrustworthy as a basis for calculations) remained stationary.
(3) The total attendances have increased greatly, the clinics being more appreciated as time passes.

The circumstances of insurance practice are explained in the report, while, though criticism is not deprecated, the fair reminder is given that the service having grown up under unpropitious circumstances has not had a fair chance of arriving at the hoped-for all-round efficiency. A new scale of medical remuneration and the use of record cards have been introduced; the latter innovation was received in certain quarters with opposition, the value of statistical information being counterpoised by the ethical difficulties, of which more, it appears, may be heard. The limitation of panel lists and the new facilities for choice of doctor must have a beneficial effect upon a service which ministers to about one-fifth of the whole population, for the number of insured persons entitled to such benefit in 1920 was, we are told, 13,873,000, while computations show that about 60 per cent. of these people actually received treatment.

The report covers a number of other important functions of the Ministry, either in integral chapters or as appendices, and we shall have constant occasion to make further reference to it.

## DERMATOLOGICAL PROGRESS.

IT is no exaggeration to say that much of dermatology is still a closed book to many medical men. That this should be so is partly due to the unnecessarily complex nomenclature of skin diseases; partly to the fact that even an elementary knowledge of the subject is seldom required in the qualifying examinations; and to some extent because an "eye for skins," like an "ear for music," though not precisely an innate gift, can only be acquired with perseverance and use of all opportunity. This is regrettable, since, apart from definite eruptions, changes in the texture, colour, and secreting functions of the skin are often the earliest signs of ill-health, and may unmask some abnormal condition which, if neglected in its beginning, may lead to serious disease.

In his Lumleian lectures for this year, two of which we have already published and the third of which we publish this week, Dr. Arthur Whitfield shows with admirable clearness how modern research is tending to raise dermatology to its rightful place in medical science; and in the light that is now being thrown on their causation the nomenclature and classification of skin eruptions is becoming progressively simpler. These lectures make fascinating reading, and some of the case-histories of patients with eczematous dermatitis due to external causes afford the amusement of good detective stories. The importance of focal sepsis, bacilluria, and indicanuria in the ætiology of some skin diseases is rightly insisted on, but Dr. Whitfield is not only an acute observer, he is also a very careful critic both of his own work and that of others, so that his conclusions may be accepted with confidence. Of particular interest are the cases he quotes of autosensitisation—namely, those in which a generalised eruption may follow severe bruising of the tissues, and those in which the fluid from the vesicles of an acute eczema is irritant to the patient's own skin but innocuous to that of a healthy person. The question, too, of foreign protein sensitisation, which is being exhaustively studied in America, certainly deserves the closest attention both from the dermatologist and the general physician, but it is beset with difficulties, and the interpretation of the phenomena already observed is, as Dr. Whitfield points out, by no means clear. Further research in the subject may show that it is of far greater importance than at present seems likely, and it is one of particular interest to the dermatologist, since cutaneous eruptions are some of the commonest reactions that occur as a result of protein sensitisation. Dr. Whitfield deserves credit alike for his own original work and for having shown so clearly that dermatology is now securely based on scientific investigation and reasoning.

## THE COMPOSITION OF MILK.

A QUESTION was recently asked in the House of Commons on the prosecution of farmers and dairymen for supplying milk deficient in fat, and it was suggested that the basis of any prosecution should be not one or two but a series of tests to eliminate the possibility of unfairness. Sir A. Griffith-Boscawen admitted that the subject was of interest.

The value of milk as an article of food depends upon (1) its chemical composition—i.e., upon its content in protein, carbohydrate, and fat; (2) its content in the three accessory food factors or vitamins. Its food value is generally calculated from the composition of protein = 3·3 per cent., carbohydrate = 4·8 per cent., and fat = 3·6 per cent., but in reference to its sale its value is based upon a minimum of 3 per cent. fat and solids not fat of 8·5 per cent. It is well known that the chemical composition of milk varies greatly; not only does the fat vary, but also the protein and carbohydrate. The greatest variations occur in the fat content, figures having been recorded from under 2 per cent. to above 6 per cent. The variations in protein and lactose are not so well known, since these constituents are not regularly determined, but they may amount to about 1 per cent., though usually about 0·5 per cent. The variations are due to several conditions such as time of milking, morning, afternoon, or evening, period of lactation, state of nutrition, and nature of nutrition of the animal; consequently it is very difficult to set up a really satisfactory standard for milk. On the whole the standard of 3 per cent. fat is a satisfactory figure, as usually the mixed milk from a herd of cows is sold on the market. The high fat content of the milk of some animals will balance

the low fat content of the milk of others. Daily analyses of the mixed milk of a large dairy have shown that the fat content of the mixed milks is seldom below 3 per cent. A dairyman with a small herd of cows in certain states of lactation and nutrition may easily have a milk with less than 3 per cent. of fat and be liable to prosecution. It is impossible to safeguard this dairyman under the present standards. Even if his milk be tested directly, it may happen that on that particular day the milk passes the standard. Only by further analysis of the milk—i.e., by the determination of lactose and protein—can this dairyman be protected, for it is unlikely that protein, fat, and carbohydrate will all be below the standard at the same time. Protein may be high and carbohydrate low and vice versa; fat may be high and carbohydrate low. If all the constituents are below the limits of variation at the same time, the case is then more clearly one for prosecution.

Milk is one of the few foods which contain all three vitamins, its content in these accessory food factors depending entirely upon the food of the cow or other animal. The anti-scorbutic or C vitamin has been definitely shown to be more abundant in the milk of grass-fed cows than that of stall-fed cows. Summer milk is a better anti-scorbutic than winter milk. The same holds for the fat-soluble A vitamin. The amount of factor A in milk may be closely connected with the greater prevalence of rickets in spring (after winter feeding). The absence of the anti-neuritic or B factor in milk has been most clearly demonstrated in certain human milk. Children have been cured of beri-beri if the mother has been supplied with food containing B vitamin. All the three vitamins in milk are derived from the food of the animal and are not produced by the animal. Further, there is no connexion between chemical composition of milk and vitamin content. A milk of high fat content may be low in content of factor A. Milk from a cow on dried food does not contain C factor.

## HUMAN REMAINS AS HISTORICAL DOCUMENTS.

THE opinion was at one time prevalent that we could learn no more of the origin of the British people than writers of antiquity had chosen to tell us. From the report on the Museum of the Royal College of Surgeons of England just issued by its conservator, Sir Arthur Keith, we learn that the prospect of a reliable history of the kind of people who have inhabited this country for many thousands of years past continues to improve. Only those who are familiar with the methods and industry of modern archæologists are aware of the exactness with which ancient graves and their contents can be dated. All the experience gathered by archæologists in Egypt, Mesopotamia, France, Italy, Germany, Scandinavia, and Britain is being pooled, with the result that the British archæologist obtains a clue to the dating of the various funereal customs which he comes across in the course of his explorations. From the present report, as from those of previous years, we note that the College of Surgeons' Museum is becoming a mausoleum "for such human remains as serve as historical documents." To be worth preserving human remains must be excavated with the skill that knows how to look for and how to preserve evidence of date. Anglo-Saxon cemeteries and graveyards of the Roman period are not uncommon, but very few have been explored with skill. From a Roman cemetery excavated on the property of Mrs. Clifford at Barnswood, near Gloucester, a large sample of west-country people, of the third century A.D., has just been obtained.

We learn further from the present report that the preservation of human remains of known date, which began from purely academic reasons, is likely to throw light on many problems—obviously on the prevalence of caries of the teeth, pyorrhœa, muscularity and stature of the people, but also on more obscure conditions, such as contraction of the palate and prevalence of conditions affecting the growth of bones. In the opinion of Sir Arthur Keith contraction of the palate, now affecting 40 per cent. of the modern population of English cities, is of comparatively recent origin. We are glad to note that the Scientific and Industrial Research Council has recognised the national value of the great collection of human skulls and other remains which has been built up by the Council of the College, and has given a grant to pay a research worker to compile a new and reasoned catalogue of this section of the Museum. Among other points of interest in the report may be mentioned the gift of the Onodi collection of nose specimens, and the further additions to the War Office collection of specimens illustrating war wounds and their sequelæ. We note, too, that the annual exhibition of recent additions to the Museum, formerly given in July, is henceforth to take place in October.

## THE TUBERCLE BACILLUS IN PERIPHERAL BLOOD.

THE tubercle bacillus is always being hunted in some corner of the human body. Every channel of infection is explored and every secretion and excretion examined with much expenditure of carbol-fuchsin and counterstain; and yet there are still wide gaps in our knowledge of the march of the infecting organism from the point of entrance to the ultimate clinical focus of disease. Possibly the key to this "regional survey" is to be found in the circulating blood. Each successive era of experimentation seems to fasten the responsibility more definitely upon the blood, and thereby to bring tuberculosis more into line with the clinical pathology of other infective diseases. First bone and joint tuberculosis, then genito-urinary, and finally pulmonary tuberculosis become the field of our inquiry. But in spite of very reasonable grounds for hope bacteriological demonstration of the bacillus in the blood is hard to come by, except in those cases of miliary tuberculosis which are in a class apart. Shortly before the war mild excitement was caused in tuberculosis circles by the reports of Rosenberg Kurashiga[1] and others, who found bacilli in 100 per cent. of cases in the blood of both early and advanced cases of phthisis. Then followed disillusionment; others could not verify the results. Kahn[2] showed that numerous causes of error arose in artefacts; and Fraenkel[3] disposed of the 100 per cent. positive results by making inoculations of peripheral blood into guinea-pigs and finding only two positive cases out of 25; other workers obtained similar results. In an original article on this subject recently published by Distaso,[4] these results are summarised. Sixteen different investigations by various workers on 928 cases yielded 84 positive findings. Distaso, in addition, gives the results of an interesting series of experiments made by himself into the various stages of pulmonary and surgical tuberculosis (febrile and afebrile), most of which experiments yielded negative findings. A group of cases of afebrile pulmonary tuberculosis, however, gave a surprising number of positive results—9 out of 13. This group is difficult to reconcile with the findings in febrile groups, and it is unfortunate that Distaso was unable to go over this work again with re-inoculation experiments, especially as he seems to have been content with the demonstration of giant cells in his positive guinea-pigs and did not obtain tubercle bacilli. The latest report of the *Robert Koch-Stiftung*, recently received, contains an article by E. Rumpf,[5] of Hamburg, which is an exhaustive inquiry into the whole subject. Microscopic, cultural, and inoculation tests were carried out by the author, and a series of controls made upon normal people. Growth on media did not take place, whilst

[1] Zeitschs. f. Tub., 1911, xvii., 347.
[2] Münch. med. Woch., 1913, lx., 345.
[3] Deutsch. med. Woch., 1913, xxxix., 737.
[4] Tubercle, 1921, ii., 251.
[5] Veröffentlichungen der Robert Koch-Stiftung, Bd. ii., H. 3, p. 163.

in the animal inoculation experiments only a small percentage (5·7 and 8 per cent. in two different series) were positive. The author concludes that the acid-fast bacilli so frequently found, microscopically, in centrifuged blood by other workers are not virulent tubercle bacilli whatever else they may be.

And at this point we must be content for the moment to leave the question. Tubercle bacilli have been sought for in many hundreds of blood specimens withdrawn from the vein in the usual way, but with the use of the guinea-pig inoculation test only rather less than 10 per cent. of positive findings have been recorded. We now require to know whether these positive cases represent a class of case separate and distinct from all other cases of tuberculosis, or whether they indicate a phase in the clinical history of all tuberculous cases—a phase during which bacilli are discharged into the blood stream and there rapidly destroyed.

## DETACHMENT OF THE RETINA.

THE problem of detached retina is one of the most difficult in ophthalmology. Neither as to its pathology nor its treatment is there any general agreement, and in spite of isolated instances of cure, to which many ophthalmic surgeons can testify, the sad fact remains that in the vast majority of cases an eye in which the retina becomes detached inevitably goes blind. At any rate, cases of cure are sufficiently rare to justify the publication of any case such as that reported in another column by Mr. Foster Moore. At the same time the word "cure" can hardly be applied to a case which, apparently, has only been under observation for a few weeks since the reattachment of the retina was observed. A committee of the Ophthalmological Society, reporting on the subject in 1916,[1] decided to consider a case "cured" when the retina had gone back into position and stayed there for six months. To some of the committee even this period seemed too short, and the report expressed the opinion that it must certainly be regarded as the irreducible minimum. Cases, indeed, are common in which after rest in bed or some form of operative treatment the extent of a detachment becomes much diminished, and occasionally it may even disappear altogether, only to relapse as soon as the patient resumes a normal active life. The number of published and unpublished cases of "cures" collected by this committee was 85. It should be added, however, that not every uncured case of detached retina goes on rapidly to complete blindness. Some eyes in which there is still a demonstrable detachment retain even for years a certain amount of useful vision.

There are types of cases in which the prognosis is much less unfavourable. In cases following a blow, in which the cause of the detachment is an effusion of blood beneath the retina, the prognosis is favourable. The same is true of another class of cases to which Mr. Moore calls special attention—viz., detachment occurring with renal retinitis, and especially in pregnancy cases. In discussing the pathology and cure of detached retina these "symptomatic" cases are generally excluded, and attention is directed solely to the so-called "simple" cases, which, after all, constitute the great majority. As to their pathology two facts are known with certainty. The attachment of the retina proper to its pigmentary epithelium layer is so loose that the space between them is always a potential cavity, which in cases of detachment becomes an actual one containing fluid. The second fact is that the majority of these cases, but by no means the large majority, occur in myopic eyes—i.e., in eyes in which the retina has become abnormally stretched, and the vitreous cavity abnormally enlarged. Further, in a small proportion of these cases rents or holes in the detached retina are observed ophthalmoscopically. Again, in a few cases bands in the vitreous are seen, apparently attached to the separated part of the retina. Starting from these facts, different theories of the causation of the disease have been held. Graefe held that it was due to exudation into the inter-retinal space from diseased choroidal vessels. Deutschmann maintained that practically all cases are due to the traction of vitreous bands on the retina causing rents. Raehlmann put forward a theory of an abnormal osmotic pressure resulting in an excessive current of fluid from before backwards into the inter-retinal space. Now, none of these theories carry us much further towards a successful method of treatment. Deutschmann, indeed, himself claimed a large percentage of cures by his method of dividing the vitreous bands, but his claims entirely lack confirmation. Of the methods of treatment now generally in vogue the first place should undoubtedly be given to rest in bed. In recent cases, indeed, this by itself diminishes the extent of detachment and temporarily improves the visual acuity. In exceptional cases it appears that a detachment can be really cured by this measure alone, as in two cases reported by Mr. J. B. Lawford in 1915.[2] It must be added, however, that there are other exceptional cases in which a detachment appears to have been cured without any treatment whatever. The second place in treatment will generally be given to evacuation of the subretinal fluid, either by puncture with a Graefe knife or by the cautery. The unfavourable comment made by Mr. Moore upon this operative procedure is rather surprising. With regard to subconjunctival injections they have generally been employed as an adjunct in the way of treatment, and their action has been attributed somewhat loosely to counter-irritation. It has been found experimentally that an injection beneath the conjunctiva is followed by a marked increase in the albuminous contents of the aqueous. Whether or not Mr. Moore's case is an instance of cure from rest in bed or from subconjunctival injections, or whether it is a permanent cure at all, time and further experience will show. We are glad to report the case.

[1] Trans. Ophthal. Soc., 1916, vol. xxxvi.

## FRIENDLY SPAS.

IN the early days of the present month of fine weather, Sir Henry Lunn arranged for a group of 20 representative British medical men to visit Aix-les-Bains and a number of the Swiss watering places. France and Switzerland are justly proud of the facilities which they are able to offer for hydrotherapy and aerotherapy, under conditions of great natural beauty, and the grave depression which these spas are undergoing is due to political and economic causes, and not in any sense to individual failure. The state of the money market has deprived the spas of whole sections of their usual clientèle, while the Swiss themselves are largely seeking recreative holiday in adjacent countries where the exchange is in their favour. It is not unnatural, therefore, that Aix-les-Bains, Ragaz, and the Engadin should look to an influx of patients from English-speaking countries to retrieve their fortunes, the more so as it was English custom which set going their prosperity a generation or more ago. Of the warmth of the reception which awaits them there no doubt can exist; the hospitality lavished on the British medical visitors was evidently something more than a laudable desire to make known certain attractive therapeutic wares; it was an earnest of the valuable team-work of hotelier, spa physician, and skilled attendant which is at the command of every patient and which has brought the practice of balneology to a level behind which its scientific basis sadly lags. The immediate future is likely to see this made good, for at the principal baths in the Upper and Lower Engadin scientific work is being done by men of professorial rank in connexion with the universities of Berne and Zurich, and at Aix-les-Bains the local medical society is keenly alive to the need of showing that medicinal

[2] Trans. Ophthal. Soc., 1915, vol. xxxv.

waters, skilfully applied, do more than relieve distressing symptoms, leaving untouched the underlying causes. Hot springs are, of course, available at home, where the suggestion of a university chair in hydrology has already been mooted. Switzerland however, is, unique in providing resorts of different characters at altitudes of 4000 feet or more above sea-level. Alpine treatment obviously cannot deal with more than a tithe of the tuberculosis which arises in a densely populated lowland community; but the ease and precision with which the hygienic-dietetic treatment is carried out at such alpine resorts as Montana, Arosa, and Davos must be seen to be believed, and have their lessons for the denser lowland air. The visit included, besides the places named, the baths of Loèche, St. Moritz, and Tarasp, and the climatic stations of Lucerne and Pontresina. Some account of these will follow in due course.

## VERMINOUS CONDITIONS IN LONDON: NEW LEGISLATIVE PROPOSALS.

FOLLOWING a conference of borough councils held recently in London, the London County Council has decided to make application to Parliament for amendments of their General Powers Act and the Public Health (London) Act, 1891. This is in order to secure that, in cases where persons are found to be infested with vermin, or a child is found by the local education authority to be so infested or to be in a foul or filthy condition, the premises, clothing, and other articles in use by such persons shall be liable to be compulsorily cleansed, purified, or destroyed. The attention of the Minister of Health is also to be drawn to the desirability of amending the Cleansing of Persons Act, 1897, so that it shall become the duty of each local sanitary authority to provide the necessary facilities for dealing with verminous persons. The Council will further suggest legislation empowering local authorities to inspect second-hand wearing apparel in the hands of dealers, making it an offence knowingly to deal in clothing in a verminous condition, and empowering the local authority to cleanse contaminated clothing at the cost of the dealer, or to destroy it without compensation to him.

## NUTRITIVE NEEDS OF PROTOZOAL PARASITES.

ALTHOUGH the nutritive needs of bacteria have been carefully investigated, the protozoa have largely escaped notice in this respect, probably because it has been assumed that, if not actually bacteria, they required complicated chemical bodies for growth. In the current issue of the *Journal of Physiology* Dr. R. A. Peters has investigated the substances needed for the growth of a pure culture of *Colpidium colpoda*. The strain of ciliated organisms used in this research were reared from one individual, and were kept alive for about ten months, free, as far as can be ascertained, from other organisms. The original organism was obtained from a hay infusion. The organisms have a mean length of about 50 $\mu$ and one micronucleus. The technique employed is fully described; pure cultures in synthetic media were obtained from a single individual and studied for a year, at the end of which time conclusive evidence was brought forward to the effect that these cultures contained only the organisms in question. Upon a medium consisting of glass, distilled water, calcium, potassium and sodium chlorides, magnesium sulphate, and ammonium glycero-phosphate test-tube cultures have been kept going by frequent subculture without diminution of the size of the organisms. Rather better results were got by substituting glucose and ammonium lactate as nitrogen and carbon sources. By counts and measurements of size it has been found that the average maximum for growth under these conditions is 8000–10,000 organisms per c.cm. The growth curve shows three phases: (1) A rise to a maximum number, (2) a more gradual fall to (3) a plateau, during which life may continue for some time. Phases (1) and (2) last about 12 days. During phases (2) and (3) the organisms diminish in size. During phase (2) temporary rises in the number of organisms may take place. Experiments upon the omission separately of the medium constituents showed that ammonium phosphate and chloride could not be omitted from glass test-tube cultures without stopping growth. Phosphate deficiency in the medium led to apparent disintegration. The omission of potassium and magnesium in glass cultures was without effect, but in quartz test-tube cultures potassium deficiency led to failure of movement and death of the cultures. Magnesium deficiency also inhibited growth. No effect was produced by omitting the sodium, calcium, or sulphate (separately) from the medium, though it is not claimed that traces of Na, Ca, or S were altogether absent. Uranium salts also cannot be substituted for potassium salts in the growth process—a fact proving the biological value of potassium to be not solely a question of radio-activity. Amino-acids will serve as nitrogen source in place of ammonium salts. Growth has not been demonstrated on carbon sources containing less than three carbon atoms in the molecule. Glycerate is used by the growing protozoon, but not lactate or citrate. The work emanates from the Department of Biochemistry at Cambridge University, and its further development will be followed with interest.

## THE RED CROSS REPORT.

A SOLID volume[1] containing over 800 foolscap pages of accounts, records, maps, and explanatory paragraphs will receive welcome and study in circles not usually attracted by such bulky publications. During the war there were few civilians of either sex or any age whose services were not offered to and accepted by the joint Red Cross societies in some capacity. The official military history of the war is awaited by the soldier or ex-soldier with keen interest, as is the medical history by the profession; but concealed in the pages of the report of the Joint War and Finance Committees of the British Red Cross and the Order of St. John will be found by the careful reader the epic of the women. Details of the nursing personnel, of the organisation of the central work rooms, and of registered work parties—a list of these covers 36 pages—and depôts, to give only examples drawn at random, record without unnecessary comment the extent to which the hitherto untrained contributed to the results achieved. The report is admirably balanced, consisting of four main sections and appendices. A preliminary note on the genesis of the Joint Committees leads on to an account of their general management, including the personnel in charge of separate departments. The various sources from which the colossal sum of £21,885,035, the total of the receipts between Oct. 20th, 1914, and June 30th, 1920, was amassed are set out clearly in tables showing that over 16½ millions in cash, and over a million in stores, were actually collected from the public. The Government grant[2], amounting to £681,257, were mostly capitation allowances in respect of sick and wounded men in Joint Committee hospitals. The expenditure on war work amounted to £17,340,428 and on after-care and other post-war schemes to £2,717,927, leaving a surplus on June 30th, 1920, of £1,826,680; while administration expenses were kept to the low figure of £741,725, or 3·39 per cent. of the income. The section on personnel is limited to the consideration of the paid staff sent out from headquarters. The Medical Personnel Department

[1] Reports by the Joint War Committee and the Joint War Finance Committee of the British Red Cross Society and the Order of St. John of Jerusalem in England on Voluntary Aid rendered to the Sick and Wounded at Home and Abroad and to British Prisoners of War, 1914–1919, with Apendices. London, H.M. Stationery Office, 1921, pp. 823, price 12*s.* 6*d.*

of the British Red Cross Society was taken over on Oct. 20th, 1914, by the Joint War Committee, and the late Mr. Edmund Owen was appointed to coöperate with Sir Frederick Treves, who was then in charge, Sir William Bennett succeeding Mr. Owen at his death in 1915. The total number of doctors engaged by this department for service at home and abroad was about 400, and, in addition, many local appointments were made. Thirteen units, consisting of medical officers, dressers, nurses, and orderlies were sent out to France and Belgium before October, 1914, and six later in the same year. Thenceforward no further complete units were sent to France, though several were despatched to more distant countries. The provision of stores to Red Cross hospitals and additional comforts to the whole army is described year by year. A chapter on ambulance contains excellent pictures of interiors of bacteriological laboratory, dental surgery, soup kitchen, and workshop cars. The account of the development of the Voluntary Aid Department is of special interest, and will be read perhaps more widely than any other section of the report. The establishment of the King George Hospital and of the auxiliary home hospitals and convalescent homes, hospitals, and camps is described, and notes on the after-care of disabled men, the central work rooms, the Red Cross library, and miscellaneous grants to auxiliary bodies complete the section of the report dealing with headquarters work and finance. A detailed account, arranged geographically, of work abroad is then given. The next section describes the efforts made on behalf of the wounded and missing, and prisoners of war, and is followed by a brief note on the demobilisation schemes carried out by a board presided over by Sir Aurelian Ridsdale. The report, which is signed by Sir Arthur Stanley and Mr. Evelyn Cecil, M.P., concludes with a few words on the satisfactory relations maintained between the Joint War Committee and the Government, a tactful note on the question of awards of honours, and an appreciation of the work of the Committee from the Director-General of the Army Medical Service. Twelve appendices enumerate the auxiliary home hospitals, work parties, &c., and give particulars of the Geneva Convention and the Hague Conference. Various specifications and local reports are also incorporated, and an index, extending over 34 pages, completes a report of which it need only be said in praise that it is as adequate as the work it describes was wonderful.

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PUBLICATION of Dr. Golla's second Croonian Lecture, delivered before the Royal College of Physicians of London, has been postponed until next week.

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ON Monday, July 25th, at 5.30 P.M., Dr. M. Diamond, Chayes post-graduate instructor at the Dental Institute of New York, will deliver a lecture and give a demonstration "On Some New Phases of Old Problems in Dental Reconstruction" at the Royal Society of Medicine, 1, Wimpole-street, London, W. Admission is free to all interested.

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THE thirty-sixth annual meeting of the Caledonian Medical Society will be held in the hall of the Royal College of Physicians, Edinburgh, on Friday, July 29th, at 3 P.M., under the presidency of Professor William Russell. The annual dinner will take place the same evening in the Caledonian Station Hotel.

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## INDEX TO "THE LANCET," VOL. I., 1921.

THE Index and Title-page to Vol. I., 1921, which was completed with the issue of June 25th, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1 and 2, Bedford-street, Strand, W.C. 2.

# BRITISH MEDICAL ASSOCIATION.

## ANNUAL REPRESENTATIVE MEETING AT NEWCASTLE-ON-TYNE.

### FRIDAY, JULY 15TH.

THE business meeting opened at 10 o'clock on Friday morning, July 15th, with a full attendance of representatives, in the King's Hall of the Armstrong College. Two women representatives were present. The room was simply but conveniently arranged, although the acoustics left much to be desired. Behind the platform two posters were in evidence, one tracing the increase in membership of the Association year by year throughout its history, the other an appeal of the Newcastle School of Medicine to clear its debt and enable it to pay adequate salaries, to endow professorial chairs, and to provide necessary accommodation for students. Dr. T. W. H. GARSTANG presided over the gathering, as last year. At the outset he introduced the President-elect, Prof. DAVID DRUMMOND, who extended a hearty welcome to representatives on behalf of the North of England Branch of the Association.

*Representatives of the Press.*

Standing orders having been adopted, a motion was brought forward by the chairman of the Agenda Committee that representatives of the press should be admitted on the understanding not to report any matters which the meeting decided to regard as private. This motion was passed nem. con., after three adherents only had been found for an amendment by Mid-Cheshire that the lay press should be excluded altogether, a précis being supplied to them for publication. Testimony was given to the fairness of the press on previous occasions in respecting the wishes of the meeting.

*Future Arrangements.*

The annual report of the Council, with the balance sheet for 1920 and the budget for 1921, having been received, it was unanimously agreed to elect Sir WILLIAM MACEWEN, F.R.S., Regius Professor of Surgery in the University of Glasgow, as President of the Association for 1922–23, and to hold the annual meeting of 1922 at Glasgow, and that of 1923 at Portsmouth. Sir HENRY CRAIK, M.P. for the Scottish Universities, was elected an honorary member of the Association.

*State Visit from the Lord Mayor.*

At this point the proceedings were interrupted to receive a state visit from the Lord Mayor of Newcastle, who recalled the previous annual meeting in the city of 1893, when medicine was by no means taking so prominent a part in public affairs. The British Medical Association he described as one of the best organisations in the world, and he congratulated the metropolis of the north on having produced not only the president-elect but the chairman of Council, Prof. R. A. BOLAM, and the medical secretary, Dr. ALFRED COX. In replying, Dr. GARSTANG admitted the very rapid changes going on in the relations between the medical profession and the public.

*The Year's Finance.*

On the motion by the treasurer, Dr. G. E. HASLIP, that the annual financial report be received, a lively discussion ensued. The meeting was invited to regard as a modern rake's progress the overspending of £23,000 in a single year when the total assets of the Association did not exceed £150,000; but only four representatives inclined to this view. On the other hand, a motion expressing satisfaction with the present financial position was withdrawn by common consent. Dr. Haslip pointed out that salaries had increased by £5000, and the outlay on paper by £2000; he thought that journalistic ability might condense the reports issued, and so effect some economy. Mr. E. B. TURNER voiced the general opinion that things must cost more, and there was no help for it. It came out in discussion that no part of the £1300 paid for

contributions to the *Journal* went to the editorial staff. The appointment of an independent committee to investigate and suggest economies was turned down.

*The "British Medical Journal."*

A hardy annual motion that the general practitioners' needs and difficulties should receive more consideration in the *Journal* was promised sympathetic attention by the *Journal* Committee. Appreciation was expressed of the good work done by this Committee and by the editorial staff. Sir DAWSON WILLIAMS is to be presented at the annual general meeting with the Association's gold medal of merit for his distinguished services to the Association. A motion to publish in full the reports of division meetings was deemed impracticable and withdrawn.

*Professional Secrecy.*

A motion was submitted by Dr. R. LANGDON-DOWN, chairman of the Central Ethical Committee, to the effect—

(1) That when a medical practitioner refuses to divulge information which he has obtained in the exercise of his professional duties in such circumstances as the following: (*a*) in a Court of Law when the Court has ruled that information so obtained must be disclosed; (*b*) where it is already provided by Act of Parliament that he must do so, for instance in the notification of certain diseases; such action must be taken entirely on his own responsibility, and the Association cannot be expected to support him or protect him from consequences he may incur in so doing.

(2) That if attempts be made to add additional exceptions to the general rule of the profession as regards professional secrecy, the Association recognises that it will be necessary, after consideration (i.) to resist by all lawful means any such encroachment, and (ii.) where such encroachment is attempted to accord support by any means in the power of the Association to any individual practitioner who may be assailed through such new encroachment

In the discussion that followed it became at once apparent that representatives were prepared to go much further than a year ago, and that the Central Ethical Committee's motion would not suffice them. In his amendment from Birmingham Central, Dr. H. G. DAIN pointed out that it by no means necessarily served the public interest for a doctor to disclose professional secrets on the instruction of a judge. Every individual member of the public had no doubt that *his* doctor ought, under no circumstances, to tell anything about him. Statute recognised no right of refusal to give evidence, even for the lawyer and the priest, but common law admitted privilege for the lawyer, and the priest was never asked. Many States of America, France, and New Zealand protected the doctor who refused in civil cases to violate his patient's confidence. Let the doctor refuse in the English court and take the consequence with the Association behind him; no judge had yet committed a doctor for contempt under these circumstances. After prolonged and searching discussion, in which the solicitor supplied a telling illustration of the class of case in which a medical man may help the ends of justice by supplying information, the following amendment was put and carried with not more than a dozen dissentients:—

That the Association use all its power to support a member of the Association who refuses to divulge, without the patient's consent, information obtained in the exercise of his professional duties, except when it is already provided by Act of Parliament that he must do so.

Not having been presented with the statutory two months' notice, this amendment, now passed as a substantive resolution, cannot become the accepted policy of the Association until the next representative meeting, but it will appear as such on the agenda next year, and in the meantime be a recommendation to this effect to the Council.

*Proposed Central Medical Committee.*

On a motion standing in the name of the chairman of Council to approve the section of the annual report setting up a Central Medical Committee representative of the profession as a whole to consult with the Minister of Health on questions of policy affecting the profession, Dr. BOLAM opened by admitting that the matter was in abeyance. Action was initiated owing to some remarks of Dr. Addison, late Minister of Health, substantially as follows:—

"On several occasions I have said in public 'If you want us to consult you, get busy and set up machinery whereby you can readily be consulted.' I quite agree as to the reasonableness of consultation in the formative stages regarding regulations or conditions, or general principles, if some machinery for consultation were available, but I will not consult half a dozen different bodies, each claiming to represent the profession. No body of medical men is more competent than those before me to-day to state a case for the profession, and I should be very glad to see them in consultation. I am speaking now, of course, of consultation with an exterior body, in respect of the profession generally. I am leaving out of account for the moment the Consultative Council, which is now a part of the machinery of the Ministry. As soon as practicable, I, or an officer acting on my behalf, will be willing to discuss the general principles with some body representing the profession. I can imagine no organisation better qualified than the British Medical Association to get together a representative body, but I repeat that I am not going to make an agreement of this kind with a number of different bodies each claiming to be representative."

At the time of issue of the annual report the position was that the Society of Medical Officers of Health, the Poor-law Medical Officers' Association, and the Association of Certifying Factory Surgeons had agreed to coöperate in the formation of a central medical committee; the Medical Women's Federation was discussing the matter at its next Council meeting; and the Medico-Psychological Association had stated that it would be glad to coöperate with the British Medical Association through the Federation of Medical and Allied Societies in all matters and questions to be considered by the Ministry of Health.

A new Minister of Health was now in office, and the Association, Dr. Bolam said, was awaiting the reopening of the whole question. In the discussion which followed it was suggested that it was childish to ignore the Medico-Political Union in getting the collective medical opinion of the country. Lord DAWSON thought the best way out of a thorny path was to leave matters in the hands of the Council to explore, leaving out of account for the moment the Consultative Council of the Ministry of Health, which had not yet matured. He paid a tribute in passing to the perspicacity, foresight, and sympathy of Dr. Addison. This Committee was in the nature of a medical charter to be jealously guarded; it had been given the right to initiate advice. Maybe its methods of selection might and could be improved. Dr. H. B. BRACKENBURY described the Consultative Council as a check upon bureaucracy, and as a useful agent for the Association to uphold. "You will," he said, "never get a united representation of the medical profession at the Ministry of Health; there will always be small minorities on every question; but the Association was in and by itself sufficient to represent the medical profession."

It was finally agreed to remit the whole matter to the Council for its consideration, along with the following motions standing in the name of the divisions noted:—

Motion by Portsmouth: That the Representative Body is of opinion that the collective opinion of the medical profession can be adequately and truly expressed to the Minister of Health only through a body elected directly by the profession for that purpose, such body to have the power, if thought advisable, to coöpt for any special purpose representatives of the medical profession not exceeding one-third of the total number of the Committee.

Motion by Portsmouth: That this election should be organised and conducted by the British Medical Association.

Motion by Sheffield: That this meeting endorses the view expressed by Dr. Addison, as Minister of Health, that in taking action to bring together a body representative of the whole profession for the purpose of consultation by the Government, the British Medical Association is the most suitable body to take steps for its organisation.

Motion by Brighton: That any scheme placed before the Minister of Health by which it is considered the collective opinion of the members of the medical profession in active practice can be obtained on questions of policy should be submitted to and approved by them; that it be an instruction to the Council to submit to all members of the medical

profession in active practice, either directly or through the Division organisation, the proposed scheme with a questionnaire, and the aggregate voting thereon be recorded and forwarded to the Division and Representative Body, together with the report on action taken.

A motion by East Hertfordshire similarly approved of the formation of any Consultative Committee on which the B.M.A. would be associated with all other bodies representing the various branches of the profession, for the purpose of negotiating with the Government.

SATURDAY, JULY 16TH.

*Federation of Overseas Branches.*

On a motion standing in the name of the chairman of the Organisation Committee to approve and adopt draft articles and by-laws to meet the circumstances of Overseas branches—Mr. RUSSELL COOMBE submitted that the position had been completely altered by the deliberations of a conference held on July 5th between overseas and Irish representatives and representatives of the Council on the question of possible federation facilities. At the chairman's request Dr. R. H. TODD, representing the Australian Federal Committee, spoke to this matter. Branches of the Association in Australia, he said, had to represent the profession in a very direct way, dealing as they did with independent States of the Commonwealth, and it was impossible to conduct business through the central office in London. The New South Wales branch, for example, was incorporated under the Companies Act "not for gain," had its own journal, library, and building, and was a compact organisation in itself. As a barrister he contended that such a body might legally remain a branch of the parent Association, its members being individually members of that Association. The branch as incorporated would not be entitled to act as agent of the Association or incur any liability on its behalf; the Association was therefore adequately safeguarded.

Accepting Dr. Todd's view, the representative meeting decided to scrap the scheme of de-federation already drawn up, and to accept two further recommendations of the special conference in the following form:—

That, if possible, provision be made in the regulations of the Association to allow the Overseas branches to retain the character and status, the rights, powers, and duties of branches, although incorporated; such steps being taken as may be necessary to protect the Association from liability for any act of the incorporated body.

That provision be made in the regulations of the Association for Federal Councils of the Association in the Dominions and India, consisting in either case of representatives of the branches concerned, to carry out in these countries, on behalf of the local branches collectively, the objects of the Association, and generally to have the powers and duties of the existing Federal Committees.

*Affiliation with Medical and Non-Medical Bodies.*

At the Representative Meeting of 1920 it was agreed that the Association should take steps to obtain further powers under its constitution whereby, without abandoning its present position as an association of individual members of the medical profession, it might become, in addition, a federation of medical bodies. The propriety of this course was raised in a long series of amendments on the agenda paper for 1921. Speaking to the first of these from Reigate Dr. S. M. MACKENZIE queried whether federation of any kind would strengthen the Association. Of four medical societies, numbering 2900 members, whose affiliation had been suggested, 1500 were already members of the Association. No other bodies, least of all the Royal Colleges, were demanding federation with the Association, whose real strength lay in increasing its own membership. Other speakers urged the value to the Association of its identity and individuality, and the impression left upon public men by a large individual membership with an ascertained opinion. Affiliation might, however, offer the opportunity of thrashing out difficulties before presenting a case to the Ministry, and Dr. H. B. BRACKENBURY urged that the door should not be entirely closed.

Eventually, by unanimous decision, the policy was rescinded of admitting to affiliation with the Association any body other than a purely medical one, and for the present any medical body other than those Overseas branches alluded to in the preceding paragraph.

*The Postal Vote.*

A motion was brought forward by Cambridge and Huntingdon—

That it be an instruction to the Council to make provision so that a postal vote on any question of policy or otherwise may be taken by any branch or division after the question has been discussed at a meeting of that branch or division, and if the members present at that meeting deem such a vote desirable.

It was argued on the one hand that the member uninstructed by being present at a discussion had no right to vote upon the things discussed; and on the other that, in a rural constituency with defective means of transport, no other means than the postal vote was available for obtaining the views of the large majority. A postal vote might diminish the personal attendance at meetings and result in those who attended losing the habit of making up their own minds; but it was also a method of interesting the whole constituency in medico-legal matters. Opinion was very evenly divided, both among representatives and members of the Council, the motion being rejected on a count by a small majority.

## PARIS.

(FROM OUR OWN CORRESPONDENT.)

*The Second International Congress of the History of Medicine.*

THIS congress, which was inaugurated in Antwerp last year, held its second meeting in Paris from July 1st to 6th; it was admirably organised and well attended, the number of delegates from the various countries exceeding those of last year. The opening ceremony was held on July 1st in the Council Hall of the Faculty of Medicine. In the absence of the Minister of Public Instruction, Mr. Coville, Director of Higher Instruction, gave a brief opening address. He was supported by Mr. Larnaude, dean of the Faculty, and vice-president of the Council of the University, and Mr. Royer, dean of the Faculty of Medicine. Prof. Jeanselme, president of the Society of the History of Medicine of France, and Prof. Ménétrier, joint-president of the congress, extended a cordial welcome to the various representatives from Great Britain, Belgium, Holland, Italy, Switzerland, Spain, Portugal, Denmark, Czecho-Slovakia, Roumania, Armenia, and Greece. At the first séance in the afternoon, papers were read by Dr. Charles Singer (London), on an MSS. attributed to Guy de Chauliac; Dr. Wickerscheimer (France), on the Miraculous Healings of Cardinal Pierre of Luxembourg (1387–1390); Dr. J. G. de Lint (Holland), on Anatomical Terms Used in Ancient Egyptian Literature; Dr. Fernandez d'Alcalde (Spain), on the Various Statutes and Seals of the Chief Ancient Universities and Seats of Medical Learning in Spain; Dr. Pasteur (France), on the Beginning of the Study of Urology in France; Dr. Leclerc, on L'Histoire du Pruneau; Dr. Sergent (France), on Medical and Pharmaceutical Caricatures in the Works of Dormier; Dr. Van Andel (Holland), on the Doctors of Molière and of the Classic Drama in Holland; Dr. Basmajain (Constantinople), on Ancient Armenian Medicine; and Dr. Ricardo Jorge (Lisbon), on Encephalitis Lethargica, Typhus and Influenza in the Historic Epidemics of the Sixteenth Century.

On the morning of July 2nd papers were given by Dr. Belohlavek, of Prague, on Inaugural Theses of the Faculty of Medicine of Prague in the Seventeenth

Century; Dr. Brunon (France), on the Catalogue of the Museum of the Hotel de Dieu at Rouen; Dr. Cabanès (France), on the History of Psycho-Pathology; Dr. Blanchet (France), on the History of Medicine—Dissection and Vivisection; Dr. Dubreuil-Chambardel (France), on the Infirmaries of the Abbeys in the Eleventh Century, and the Disease of St. Sylvain in the Eleventh Century; Dr. Le Gendre (France), on the Life of Bouchard when a student in Lyons; Prof. Ménétrier, on Medical Anecdotes of the Sixteenth Century after the Contes d'Eutrapel; Dr. Sigerist (Zurich), on Conrad Heingarter, of Zurich, and Astrological Medicine in the Fifteenth Century; and Dr. Villaret, on the Origin of Intravenous Injection. On Sunday, July 3rd, at St. Germain-en-Laye, Mr. Solomon Reinach gave an interesting address in the National Museum of Antiquities on the Gallo-Roman remains.

At the morning session on July 4th papers were read by Dr. Bérillon (France), on Le Dormeur de la Hollande; Dr. Bertrand (France), on History of the Plague in Antwerp; Mr. Buchet (France), on the History of the Druggist; Dr. Delaunay (France), on Travelling Doctors in the Marne under the ancient régime; Dr. Dorveaux (France), on the Surgeons of Metz; and Prof. Laignel-Lavastine (who with Dr. Fosseyeux was joint secretary to the congress), on Psychiatry in France in the Eighteenth Century. On July 5th, in the morning, Prof. Guiart (France) gave a paper on Obstetrics in Ancient Egypt, illustrated by lantern slides; Prof. Schrutz (Prague), on Magister Gallus and Czech Medicine in the Fourteenth Century; Mr. C. J. S. Thompson (London) and Dr. Van Gils (Holland) gave lectures, illustrated by lantern slides, on the Pomander as a Link in the History of Preventive Medicine and on Medical Iconography respectively. In the afternoon the following papers were read: Prof. Jeanselme, Dietary in the Convents and Hospitals in Byzantine Times; Dr. Semelaigne, MSS. of Hiriel; Dr. Girard, Marcel Duval and the School of Naval Medicine in Antwerp (1810–1814). On July 6th, in the morning, papers were delivered by Prof. Hervé (France), on Une Expérience d'ingestion volontaire du virus rabique; Dr. Mège (France), on Some Rites of Divining in Antiquity; Dr. Adamidi (Geneva), on a Short History of the French Hospitals in Constantinople and Cairo in connexion with the French Missions to the East; Dr. Van Schevensteen (Belgium), on the Plants used in the Treatment of Eye Diseases; Dr. Fosseyeux (France), on Medicine in Italy in the Time of Dante; Mr. Guitard (France), on the Ancient Statutes of the Apothecaries of Toulouse; Dr. Lecène (France), on a Note on Surgery in Ancient Greece; Dr. Olivier (France), on Medical Ex Libris; Dr. Raymond Neveu (France), on Recent Excavations at the Temple of Æsculapius at Epidauris; Dr. Rambaud (France), on the Organisation of the Faculty of Medicine in Poitiers in the Sixteenth and Seventeenth Centuries; Mr. Van Schoor (Belgium), on the Oath of the Apothecaries; and Dr. Bouvet (France), on Medical and Pharmaceutical Advertisements in Journals of the Seventeenth and Eighteenth Centuries.

The museum of historical medical objects, loaned by various institutions and members, was arranged in a large room in the school of medicine. It included a fine collection of medical coins, medals, and plaquettes lent by Prof. Gilbert and Dr. Desnos, and a large collection of surgical instruments of the eighteenth and nineteenth centuries was exhibited by the Faculty of Medicine of Paris. Dr. Guelliot lent some interesting Roman bronze surgical instruments and antiquities excavated at Rheims, and Dr. Harmonic lent his fine collection of medical antiquities. This comprised some interesting French microscopes of the eighteenth century; bronze mortars of the sixteenth and seventeenth centuries; Greco-Roman surgical instruments; Persian anatomical drawings, sixteenth century; some curious specula of the sixteenth and seventeenth centuries; artificial limbs of iron as figured by Ambroise Paré, sixteenth century; ancient appliances for reducing fractures, seventeenth century; two accouchement chairs, one of which was a portable contrivance for use of the "sage-femme." Prof. Laignel-Lavastine lent a medallion of the Baron Larrey, and some curious wooden urinals used for infants. An anatomical figure or mannikin of ivory and an amulet of St. Gorgan was lent by the École de Médecine of Rouen. Dr. Coulomb exhibited his interesting collection of artificial eyes, consisting of the eyes inserted in ancient Egyptian mummy cases, Utchat eyes in faience, and the artificial eye of more recent times. The Administration Générale de l'Assistance Publique exhibited a number of prints, and the seal and portrait of Baudeloque. A collection of old pharmacy jars, mortars, old drugs and books were lent by the Pharmacie Centrale de France. Dr. Guillon lent an endoscope of Desormeaux of 1852, and Dr. Berillon exhibited a large collection of charms and amulets. These, together with many other objects, formed a museum of considerable interest, and one which attracted numerous visitors. During the congress visits were paid to various hospitals, museums, and places of interest in the neighbourhood of Paris, and various receptions were given to the members, who also, by invitation of Dr. Henry de Rothschild, attended a special performance of "La Caducée."[1] At the closing session, held in the afternoon of July 6th, it was decided that the next meeting of the congress should be held in London in 1922.

### *Report of the Académie de Médecine upon Protection against Radiation.*

The report of the Commission du Radium (sur les dangers des radiations pénétrantes et les moyens de les éviter) adopted by the Académie de Médecine contains a carefully complied résumé of the risks involved in the manipulations of radium and of the more penetrating kinds of X rays. The attitude of the Commission towards these dangers is identical with that of the committee in England whose preliminary report has recently appeared in THE LANCET; it is held that the dangers may be avoided by the adoption of well recognised precautions. Radiological practice in France is not entirely without legal restrictions, in many ways to its benefit, and the question of adequate space where work of this kind is carried out is one of great importance, not only because of the rapidity with which the radiation diminishes with the distance from the source (the inverse square law), but also because adequate ventilation in small rooms is very difficult to arrange. The law in France requires a minimum of 4 by 5 metres for radiological rooms. The report is a well balanced exposition, neither disregarding dangers which exist nor adopting an attitude tending to exaggerate them. It reminds the reader that our normal habitat is one which is not free of penetrating radiation, and by a few well-chosen examples it shows that a reliable basis of security for all radiologists is afforded by the rational and consistent use of protective devices.

### *Action of Bismuth Compound on Syphilis.*

At a recent meeting of the Académie des Science, Mr. E. Roux, director of the Pasteur Institute, communicated the results of a series of researches made by MM. C. Levaditi and R. Sazerac at the Pasteur Institute. The researches consisted of the study of the effects of intravenous and hypodermic injections of solutions of tartrobismuthate of potassium and sodium into rabbits into which human syphilitic virus had been injected previously; the action of the same chemical compound was also tried in the case of trypanosomiasis nagana in the guinea-pig. The report points out that the results obtained have encouraged the authors to treat with this tartrobismuthate patients suffering from syphilis, and that they claim to have observed that the spirochætes disappeared from chancres and papules after one injection.

[1] THE LANCET, 1921, ii., 28.

# CONTROL OF VENEREAL DISEASES.

*The Value of Prophylaxis in Venereal Disease.*

RECENT laboratory and clinical research in Germany into the problems of prophylaxis of venereal disease seem largely to have centred about (1) the composition of a disinfectant which at one and the same preparation is preventive of both syphilis and gonorrhœa, (2) the length of the post-coitus interval, beyond which prophylaxis is futile, and (3) the elaboration of a fool-proof disinfectant ritual. The upshot of researches in connexion with the last problem is disappointing, although it is properly assumed that the protection of fools is desirable. Referring to his experiences in a military hospital in Roumania during the war, Dr. J. Schumacher [1] relates how soldiers initiated into the mysteries of disinfection before coitus in rooms set apart for this purpose were constantly developing gonorrhœa. He had greater success with "intelligent" persons. But even in this ill-defined class he had sometimes to register failures, and these referred to syphilis as well as gonorrhœa. This is not surprising when the elaborately detailed account of prophylactic disinfection for syphilis, as given by Dr. Schumacher, is studied. The strength of a chain is in its weakest link, and an "intelligent" pupil of Dr. Schumacher, who followed every instruction but one, developed an intra-urethral chancre because he had consistently omitted to swab out the fossa navicularis with a solution of perchloride of mercury. The gist, then, of this paper is that with suitable disinfectants and their skilled use prophylaxis is perfectly feasible, but that a disinfectant does not disinfect in the hands of an unintelligent person any more than a typewriter types in the paws of a baboon.

Reporting on their experimental studies at the bacteriological laboratory of the "Reichsgesundheitsamt," Dr. P. Manteufel and Dr. H. Zschucke [2] state that they have found mercurial salts quite as effective as silver salts in the prophylaxis of gonorrhœa, and that though an ointment containing mercurial salts may be less effective than the same strength of these salts in solution, yet by increasing the concentration of the salts in ointment form, a rapidly effective disinfectant action on gonococci can be secured. Hence their conclusion that prevention of both the principal venereal diseases can be effected by one and the same preparation, and they recommend for this purpose 0·3 per cent. sublimate in lanolin, which provides mechanical as well as chemical protection. As to the post-coitus interval, beyond which prophylaxis is futile, they stress its brevity. Siebert has shown that the Neisser-Siebert prophylactic cream may, indeed, be effective in apes six hours after infection, but Schellack has found that three minutes after intracutaneous infection with the spirochæte of recurrent fever, infection cannot be averted by washing with alcohol. Manteufel and Zschucke, experimenting with the spirochæte of recurrent fever in mice, found that within 30 minutes of infection no disinfectant was reliable. They also refer to Neisser's experiments, which showed that syphilis in apes could not be aborted when the site of infection was excised ten minutes after inoculation. Inada has also shown that five minutes after material containing Weil's spirochætes had been applied to healthy skin they had penetrated deeply enough to be beyond the control of disinfectants. These and similar experiments throw much doubt on the efficacy of late prophylaxis.

Schumacher's survey of the numerous prophylactic disinfectants which have hitherto enjoyed considerable popularity is not conducive to an easy faith in them. Metchnikoff's calomel ointment has, he says, been found quite ineffective in the prevention of syphilis by all who have tried it, and he doubts if it would ever have had much of a vogue but for the distinguished name associated with it. Probably in the rare cases in which it did achieve the desired end its success was due to the presence in the ointment of a soluble salt of mercury. As for the Neisser-Siebert ointment, it has given satisfaction in some hands, but not in others. Perhaps the failures recorded may be traced to decomposition of the constituents of this ointment, for it has been put up in metal tubes in the past, and this has meant the conversion of sublimate of mercury to metallic mercury, which is comparatively inert. Of the more complex mercury salts, hydrargyrum oxycyanatum has been extolled as being six times as potent as the sublimate, as well as being comparatively atoxic to the tissues and not being affected by contact with instruments. But Stricker has seen death follow irrigation of the urethra with this salt and, as in the case of calomel, there seems reason for the suspicion that this salt has sometimes contained impurities. Schereschewsky's quinine ointment has, in Manteufel's experience, invariably protected against syphilis, whereas he has had failures with the Neisser-Siebert ointment, and the former ranks with aqueous solutions of sublimate of mercury in efficacy. All authorities apparently agree as to the superiority of solutions over ointments as prophylactics, and the efficacy of the Neisser-Siebert ointment is enhanced if it is made up with water. Schumacher concludes that the best preventives of syphilis are a 0·1 per cent. solution of sublimate of mercury and quinine ointment; the former, in the strength indicated, is effective against gonorrhœa also, whereas the action of quinine on the gonococcus has not apparently been studied sufficiently to warrant a definite opinion on this score.

[1] Deut. med. Woch., June 2nd, 1921. [2] Ibid., Jan. 13th, 1921.

*The Limitations of Wassermann's Reaction.*

Two papers recently published in the Danish medical journals show again that, whether negative or positive, Wassermann's reaction should not be regarded as so infallible as to render superfluous the judgment of the skilled clinician. Under the heading "Negativ W.R.—Aktiv Syfilis," Dr. Johanne Christiansen [3] analyses the syphilis records of the Rudolph Berghs Hospital for the three-year period, 1918–1920. Of 474 patients treated in 1918, 17 gave a negative reaction, although there was clinical evidence of a secondary or tertiary outbreak. Ten of these patients had, however, undergone specific treatment at an earlier stage, but there were three who had never received specific treatment, and who, in spite of a large secondary eruption, gave a negative reaction. After giving somewhat similar figures for the two following years, Dr. Christiansen draws attention to the fact that among 12 patients, suffering from active secondary or tertiary syphilis, with no record of specific treatment, and with a negative Wassermann reaction, as many as seven were women, who were either pregnant or had just been confined.

In the second paper headed "Positiv Wassermann—Aktiv Syfilis," Dr. T. E. Hess Thaysen [4] twits the clinician for his indiscriminate faith in serological reports, and for assuming that a positive Wassermann reaction must necessarily indicate clinically active syphilis. The author recognises the great difficulties of distinguishing between latent and active syphilis, but he is convinced that there is a large proportion of cases in which, in spite of a positive Wassermann reaction and total lack of specific treatment, the disease is and remains perfectly latent. He can also establish no correlation between the intensity of this reaction and the clinical prognosis, and he justifies this view by a study of 283 cases of syphilis treated with mercury and showing a positive reaction. He gives illustrative cases to show that there may be no clinical or post-mortem evidence of syphilis in patients whose serum has presumably been capable of giving a positive Wassermann reaction for 30 years or more. He refers to Danish statistics showing that among 2598 patients attending hospital there were 57, or between 2 and 3 per cent., who gave a positive reaction, although they showed no clinical sign of syphilis and denied infection. If the patients, whose only sign of syphilis is a positive Wassermann reaction, may be

[3] Hospitalstidende, May 18th, 1921.
[4] Ugeskrift for Laeger, June 9th, 1921.

assumed to be syphilitic, the remarkable conclusion can be drawn that they represent between one quarter and one-fifth of all the syphilitic cases among the 2598 just mentioned. In a group of 120 cases of syphilis observed by Dr. Thaysen, only 46 showed clinical evidence of syphilis—i.e., 62 per cent. were in what he defines as the late stage of latency. Of this majority of 74 latent cases, as many as 59 gave a positive W.R. Dr. Thaysen gives numerous other statistics, from which he concludes that a positive W.R. in the late stage of latency does not necessarily foreshadow a recurrence of active disease. In the majority of cases in which the first infection dates back 25 years or more, and in which there has been no clinical sign of active syphilis, there is good reason for assuming that the disease will probably continue to remain clinically inactive. The moral of this paper is not that serological evidence should be ignored, but that the clinician should not allow himself to be hustled into therapeutic meddling by a serological report unsubstantiated by the patient's present state and clinical record.

*The Cause of Relapses of Gonorrhœa in Children.*

In two recent papers, Dr. Edith Valentin has added to our knowledge of gonorrhœa in childhood, and one important feature of her research is the demonstration of the frequency with which gonorrhœa of the female genitals in childhood is complicated by gonorrhœa of the rectum. She sees in this disease of the rectum a reservoir of infection which determines recurrence of gonorrhœa in the female genitals weeks, and even months, after they have been effectively sterilised by antiseptic treatment. In her first paper [5] she deals with the 161 girls admitted between July 15th, 1919, and Dec. 1st, 1920, to a convalescent home in Berlin for the subjects of infantile gonorrhœa. Her first task was to determine the frequency with which the parts adjoining the vulva were affected. The urethra invariably contained gonococci, and they were also found in the catheter urine of 30 out of 44 consecutive cases examined for gonorrhœal cystitis. But for lack of histological and cystoscopic examination of the bladder, it was doubtful whether the gonococci found in the urine had established themselves in the walls of the bladder or were only incidental visitors displaced from the urethra into the bladder. The cervix was also examined for gonococci, and they were found here in 7 out of 17 cases of acute gonorrhœa. In 24 cases of chronic gonorrhœa and in 13 cases of gonorrhœa which had been suppressed by local treatment, the cervix was not once found to harbour the gonococcus. The examination of the rectum for gonococci being complicated by pitfalls for the unwary, the precaution was taken first to examine the rectal flora of about 100 healthy infants. In the 8 or 10 cases in which pus cells as well as bacteria were found, some definite reason for this evidence of inflammation, such as the presence of oxyuris, was always demonstrable. In a series of 94 children, suffering from recent or chronic gonorrhœa, all, with only two exceptions, harboured the gonococcus in the rectum. The abundance of leucocytes suggested that the gonococci were not leading an innocent, saprophytic existence in the rectum, but were provoking an inflammatory reaction, although there were no symptoms referable to this region. Dr. Valentin concludes this paper with the opinion that, in the absence of oxyuris, the presence of pus cells in the rectum of a child suffering from gonorrhœa of the vulva is proof of gonorrhœa of the rectum.

In her second paper [6] she urges the extension of local treatment for gonorrhœal vulvo-vaginitis to the rectum if the physician wants to eliminate the most frequent cause of relapse. In 61 cases which relapsed 6 to 21 weeks after the vulvo-vaginitis had apparently been cured, she invariably found gonococci persisting in the rectum. In none of these cases was there any sign of bartholinitis; the catheter urine did not contain gonococci, and the cervix was also gonococcus-free. Thus the only source of reinfection seemed to be the rectum.

[5] Deut. med. Woch., May 26th, 1921. [6] Ibid., June 2nd, 1921.

# THE MACHINERY OF PENSION ADMINISTRATION.

THE War Pensions Bill, introduced in the House of Commons by Mr. Ian Macpherson, was read a second time without a division only three days after the publication of the Report of the Departmental Committee of Inquiry [1] upon which it is founded. This was quick work, giving no time for persons affected to consider and discuss radical changes of some importance. There will, however, no doubt be opportunity for criticism, and perhaps amendment, when the House considers the Bill in Committee. As it stands, it renders effective those portions of the Committee's report which required legislation to bring them into operation, and leaves matters which are questions of departmental administration for the Ministry of Pensions to deal with.

*New War Pensions Committees.*

It provides mainly for new and fewer War Pensions Committees, subject to centralised supervision, and exercising jurisdiction over rearranged and wider areas than did the numerous voluntary committees in existence hitherto, the new bodies being appointed by the Minister of Pensions from classes of interested persons specified in the Bill. It is to be hoped that the Minister will have at his disposal such information as will enable him to appoint wisely. The chief provision of the Bill directly affecting medical men engaged in the administration of war pensions is contained in Clause 3 (3) (*b*). Clause 3 provides for the making of final awards in the case of officers and men already drawing pensions, and gives a right of appeal against such awards to a Pensions Appeal Tribunal. A second medical member will take the place of the legal member of former tribunals. These, Mr. Macpherson stated, will now consist of two medical men, an ex-service man, and an officer. The strengthening of the medical element in such tribunals is obviously a sensible and natural change, when it is remembered that the chief, if not the only, question in assessing the permanent pension to be awarded will be the present and probable future extent of the incapacity in respect of which the pension is granted.

The important question of permanent pensions has received prompt attention in the new Bill, following upon a strong recommendation by the Committee that it should be considered without delay, and in particular that about 100,000 outstanding questions of "entitlement" should be finally disposed of. The Bill proposes that the case of every officer and man "shall, with a view to making a final award, be taken into consideration not later than four years after his discharge from the service or after the first award of a pension to him, as may be prescribed by regulations." Provision is made for appeal within a year by a claimant dissatisfied with such final award on the ground that it ought not to have been made or that the proper amount has not been awarded.

*Economy in Administration.*

The Departmental Committee was appointed "to inquire into the system and methods of administration of the Ministry of Pensions, with special reference to the working of the regional and local committee systems, and the existing arrangements for the issue of pensions." With such a reference it has naturally devoted a large part of its efforts to recommendations of reorganisation that will bring about economy in administration, always keeping in view the efficiency of the department for the performance of its functions. In the Bill referred to "pension" means "any pension, grant, gratuity or allowance in respect of disablement," under any of the warrants or orders administered by the Minister, and the efficiency of pension administration on its medical side has received full consideration in the Committee's report.

[1] Report of the Departmental Committee of Inquiry into the Machinery of Administration of the Ministry of Pensions. London, 1921. H.M. Stationery Office. Pp. 156. Price 2s. 6d.

Its first notable recommendation in this respect (par. 34) is that certain provisions of the Health Acts, 1919, which enable powers and duties of the Minister of Pensions with respect to the health of disabled officers and men to be transferred to the Minister of Health, should be reconsidered with a view to their repeal. It can hardly be wrong thus to avoid the possible overlapping of functions, and to retain the care of pensioners requiring continued treatment in the hands of the Minister primarily responsible for their welfare.

As to the new regional arrangements proposed, we note in the portion of the report devoted to this subject a recommendation that the new regional offices should be obliged to deal carefully with complaints, and that awarding and medical officers should be instructed to explain briefly, in answer to queries, the grounds of a decision given. This imposes a certain amount of additional trouble on the medical officer, but, so far as such instruction can be complied with, it may promote smoothness of working and the contented acceptance of decisions. A statement of the grounds of a decision on a medical matter will, however, always be primarily of interest to the medical advisers of the pensioner whose opinion it may overrule, and the knowledge that it will have to be given will be a valuable protection to the pensioner. Paragraphs 137–141 deal with means for rendering the medical history of a pensioner more readily available as an aid to his efficient treatment.

*The Organisation of Medical Services.*

Part VI. of the Report is devoted to "Medical Services," dealing, firstly, with their cost, and, secondly, with their organisation and duties. Their approximate total cost for the year ending March 31st, 1921, is given as £9,187,271; of this, however, the supply of artificial limbs and surgical appliances, and the travelling expenses of patients, account for over £1,100,000. With regard to the duties to be performed by medical officers, the performance of these by regional rather than by headquarters officers is advised, and a strong recommendation is made as to relieving medical officers of clerical duties that can be performed by a lay staff (par. 335). The consideration of the work of the medical boards occupies several pages, and suggestions are made having to a large extent the object of preventing complaints and securing the pensioner's understanding of and acquiescence in the award to be made. The reducing of the personnel of medical re-survey boards is advised as a means for securing attendance only of those necessary, with the consequent quicker despatch of business. The continued use of civil hospitals for in-patient treatment is recommended (par. 352). It is found that there has been no delay in admission to hospitals, except unavoidably in neurological cases (par. 353). With regard to the staffing of the Ministry's hospitals, recommendations are made with a view to economy, and as to details affecting the discharge and admission of patients. The establishment of a clearing-house at regional headquarters for dealing with questions of in-patient admission to hospitals (par. 359) is suggested. With reference to the treatment of pensioner out-patients, the number of clinics established by the Ministry amounts to 140. This number only has been sanctioned by the Treasury, and the proposal of the Ministry that an increase to 250 should be allowed is endorsed by the Committee, with further suggestions as to the use to be made of the clinics.

*The Care of Mental Cases.*

The care of certified mental cases is one of the duties of the Minister of Pensions, and among the officers appointed by him is a medical inspector (neurological), who, with a member of the Board of Control, is employed in carrying out necessary investigation as to the treatment of service patients in institutions. Less than one-fourth of the asylums made use of having up to now been visited, the Committee make a strong recommendation that the process of inspection should be expedited. The setting up of mental hospitals for certified cases by the Ministry is not recommended, for the reason that they would be few in number and often at too great a distance for the patients' relatives to visit them.

We note that a certain amount of apprehension is expressed by the Committee that the welfare of the tuberculous is not adequately cared for, and that a warning recommendation is thought necessary as to the better provision for them of sanatorium treatment (par. 378). More supervision over the provision and standard of dental treatment is also urged. The establishment of additional limb-fitting centres is also advised.

*"The Officers' Friend."*

In Part VII. officers' pensions and medical treatment are discussed, the general result being that the present administration at headquarters is considered satisfactory, and will, subject to suggestions as to details, the arrangements, so far as they depend upon the coöperation of the medical profession, be continued. In conclusion, it may be noted that under the heading "Special Assistance" the report testifies to the useful work done at the headquarters of the Ministry by the branch known as the "Officers' Friend." This is performed by a small staff of ex-officers, who assist officers and their relatives in regard to their claims, and explain the regulations to them. Medical officers suffering from the effects of their war service, and the widows and dependents of dead officers, if not satisfied that they have fully understood their right to pension and other assistance from the Ministry, should not fail to consult the "Officers' Friend."

## ROYAL COLLEGE OF SURGEONS OF ENGLAND.

*Meeting of Council.*

THE quarterly Council meeting was held on July 14th, Sir Anthony Bowlby, the President, in the chair. Mr. H. J. Waring, Mr. F. F. Burghard, Mr. W. Thelwall Thomas, and Mr. C. H. Fagge were introduced, and took their seats on the Council. A report was read from the Board of Examiners in Dental Surgery respecting candidates found qualified for the Licence in Dental Surgery, and licences were granted to 53 candidates named in the report. A report was read from Mr. F. G. Hallett, secretary to the Conjoint Examining Board of England, respecting candidates found qualified for the Diploma in Public Health, and it was resolved that diplomas be granted jointly with the Royal College of Physicians of London to 23 candidates mentioned in the report. A report was read from Mr. Hallett respecting candidates found qualified for the Diploma in Psychological Medicine, and it was resolved that diplomas be granted jointly with the Royal College of Physicians to six candidates mentioned in the report. It was resolved that the best thanks of the Council be given to the President of the American Museum of Natural History, New York, for presenting a plaster cast of the Chapelle skull and models of Dr. J. H. McGregor's reconstruction of the Gibraltar skull and brain cast; and also to Lieut.-Colonel R. H. Elliot for presenting a collection of 16 specimens illustrating rare pathological conditions of the eye. A report was read from the Committee of Medical Education and Examination, and the Council expressed their general approval of the proposed course of study and examination, and referred the report to the Committee of Management to consider. A report was read from the Committee on additional examinations in Ophthalmology and Oto-Rhino-Laryngology, which recommended that candidates for the examination in ophthalmology must be Fellows of the Royal College of Surgeons, and that they must produce evidence of having devoted, after becoming qualified, at least two years to the study of ophthalmology as a clinical assistant, house surgeon, or registrar at a recognised institution. The report was referred to Mr. Burghard and Mr. R. Johnson, in consultation with Mr. J. B. Lawford, Mr. E. Treacher Collins, and Mr. J. H. Fisher, to prepare for the approval of the Council the regulations for candidates for the proposed examination in ophthalmology. The President reported that in response to an invitation to the College to nominate a member of the "Hospitals Commission" recommended in the report of Lord Cave's Committee, he had nominated Sir George Makins to act in this capacity. The Council elected Sir Anthony Bowlby as President for the ensuing year, and Sir Charles Ballance and Sir D'Arcy Power Vice-Presidents for the same period.

# Correspondence.

"Audi alteram partem."

## PSYCHOTHERAPY.

*To the Editor of* THE LANCET.

SIR,—I shall be obliged if you will insert the following short comments on Dr. S. Herbert's letter in THE LANCET of July 16th. (1) Dr. Herbert writes in reference to my letter of the previous week: "I did not confuse psychotherapy with psycho-analysis." But I did not make this charge against him, and I specially pointed out that he used the word "psychotherapist" with its proper meaning. What I emphasised was the prevalent trend towards the confusion of "psychotherapy" with "psycho-analysis," which is undeniable. (2) Dr. Herbert writes of my "bias" against psycho-analysis. By this I suppose he means my opposition to the greater part of the Freudian teaching, and, if so, I fully accept the imputation of "bias." No one can reason on any matter without some bias towards one or other method of approaching it. (3) Dr. Herbert, in referring to my use of the words "false psychology" implies that I intended to brand all Freudian views and writings with falseness. This was not my intention. When I wrote that "the importance of the sex-factor in the genesis of mental disturbances was emphasised long before this doctrine was exaggerated, transformed, and linked up with what most scientific thinkers deem to be a false psychology," I meant, of course, by "false psychology" the basic assumption of Freudians, the hypothesis of the "Unconscious Mind," and thought that my meaning was clear.

I am, Sir, yours faithfully,

London, July 16th, 1921. H. BRYAN DONKIN.

## DIGITALIS AND THE PERIPHERAL CIRCULATION.

*To the Editor of* THE LANCET.

SIR,—Dr. I. Harris, in his letter in your issue of July 9th, has not accurately defined the issue of this discussion. It is not whether an increased flow per time unit can be obtained through the arterial system in the presence of lowered blood pressure. This I do not deny. In fact, I have agreed that this is possible under such circumstances, *provided* there is vaso-dilatation. Dr. Harris, on the other hand, declares the increased flow possible in the presence of lowered pressure and in the absence of vaso-dilatation. This I deny. If there is no vaso-dilatation, then the arterial passages and exits remain as before. But to urge through undilated passages a greater blood volume per time unit demands the exercise of a greater driving force to accomplish the assuredly greater work, and there is nothing miraculous about digitalis which suspends the operation of this physical law. The force of cardiac systole must, therefore, be increased, and concurrently a correspondingly greater pressure (the other factor determining flow) be exerted by the arterial walls on the circulating blood. The blood is driven in greater volume and with greater force into the arteries and exerts upon them a greater pressure. Effective resistance is offered to this by the (according to Dr. Harris) undilating vessels, and the intra-arterial pressure rises. In this manner is obtained the greater force required to accomplish the greater work, and in consequence of it the velocity of the blood stream rises and a greater delivery per time unit is effected. It is obvious that this is the mechanics of our problem. Dr. Harris may sneer at what he calls "empty phrases such as physical laws," but I assure him that physical laws are laws, and that a series of disconnected statements divorced from reality and loosely held together by sophistic, formal reasoning does not suspend their operation.

I regret that Dr. Harris does not see fit to support the cardinal assumption of his paper—viz., that increased pulse pressure connotes increased cardiac output, and vice versa. The fallacy in this assumption vitiates all his conclusions. I did not accept it in my first letter, but "assumed it with Dr. Harris" merely in order to erect upon it an "argumentum ad hominem." In conclusion, I regret that Dr. Harris should misquote me and father me with a statement which I would not make. I did not say it is impossible to get an increased flow per time unit through the veins without an increase of pressure in them. I do know something about the function of negative pressure in venous flow. What I did say was, "If the pressure in the veins is not increased, these will be unable to pass a greater amount of blood per time unit into the heart *at the increased pressure* necessary to cause the rise of intra-cardiac pressure depicted by Dr. Harris." This is quite a different statement, and its truth is so obvious that one need not labour the point. As far as I am concerned this correspondence ceases. I am, Sir, yours faithfully,

Eltham, July 9th, 1921. W. J. GRANT.

## THE VALUE OF SANATORIUM TREATMENT.

*To the Editor of the* LANCET.

SIR,—My personal experience tallies closely with that of Dr. F. G. Caley (THE LANCET, June 18th), as to the disappointing results of sanatorium treatment, both in its individual aspect and from the economic and public health standpoints. Sanatorium medical officers are frequently unversed in knowledge of other tuberculosis therapy, and denied the opportunity of seeing the after-results of cases which have left their immediate care. The percentage of post-sanatorium relapses is comparatively high, often within a short time, making the expenditure, both public and private, out of all proportion to the private good. In sanatorium treatment *per se* there is nothing specific—i.e., capable of destroying the tubercle bacillus or the allied organisms which foster its activities.

Sanatoriums are undoubtedly of considerable value from the educational point of view, but residence therein for a term of from six weeks to three months is ineffective in doing more than in most cases temporarily to raise auto-resistance. But what of the patient with a bad family history of tuberculosis, or in whom resisting power is dangerously low, either naturally or as the result of a virulent infection or other intercurrent factors? Such cases are many and provide that failure to react which ends in a fatal issue at no remote period.

No absolute specific has yet been discovered, but the method that, during the past nine years, has given me the best all-round results in all cases except the advanced, is found in intensive nascent iodine therapy. This does not contra-indicate sanatorium treatment as well, if desired, but can readily be used apart from the latter. The treatment can be administered either orally or by ionisation, the latter procedure being by far the more rapid.[1] Iodine, evolved from iodide by a powerful reducing agent given in successive doses, or by ionisation, in my experience is of more value than administration of "intensive" drop doses of the French tincture, following the practice of Bourdreau. Although the latter procedure is simpler, the liability to gastric disturbance is greater, and a commensurate effect upon tuberculous foci is not so readily obtained. The waxy lipoid coating of the tubercle bacillus renders it at the same time hard to stain and difficult to destroy in situ, and iodine is the only effective germicide that can be introduced into the body in sufficient non-toxic concentration to dissolve this coating, to cause cell proliferation and promote catalysis, processes similar to what can be readily

[1] Clinical Journal, August 19th, 1914, Medical Annual, 1915, p. 638.

observed in the case of superficial lesions. Combined infections, if of sufficient importance, can simultaneously be cleared up by the use of appropriate autogenous vaccines.

Under treatment on such lines patients can be seen to exhibit rapid improvement, and can be treated in large numbers, in their own homes, at a vastly reduced cost with correspondingly enhanced chances of recovery. Many other observers at home and abroad, working on these lines, which were introduced in their original form by Dr. D. Curle of Glasgow in 1912, have attained excellent results.

I am, Sir, yours faithfully,

J. F. HALLS DALLY.

Harley-street, W., July 18th, 1921.

## THE ULTRA-MICROSCOPIC VIRUSES.

*To the Editor of* THE LANCET.

SIR,—I should like to call some attention to the numerous papers on the so-called phénomène de d'Herelle which are creating so much interest in the French school, and which are at present being published in the French scientific journals. May I point out that the work of d'Herelle is little more than a confirmation of my work which was published in THE LANCET of Dec. 4th, 1915, under the title of "An Investigation on the Nature of Ultra-Microscopic Viruses." At the time I realised the significance of the results, as may be seen by a reference to my paper. Unfortunately, although I discussed the results in this country, and in Salonika, during the war, the civil and military authorities did not appear to appreciate their significance or the possibility of their relation to the problems of infection and immunity. As no one in this country has taken much interest in the work, it has rested with the French school to repeat the investigation and to monopolise this field of research. It is only recently that Bordet and one or two other workers have recognised the priority of my work.

I am, Sir, yours faithfully,

F. W. TWORT.

The Brown Institution, London, July 18th, 1921.

## ON DEATH FROM RESPIRATORY AND NOT FROM CARDIAC FAILURE.

*To the Editor of* THE LANCET.

SIR,—The recent correspondence under this heading in THE LANCET of July 2nd and 9th is doubtless of interest to anyone who has had any appreciable experience in the treatment of cerebro-spinal fever. In subacute and chronic cases of this disease death from respiratory failure was more frequent than otherwise. It generally resulted soon after lumbar puncture failed to relieve the symptoms. Autopsy, when obtainable, invariably revealed acute hydrocephalus and signs of acute inflammation at the base of the brain, particularly adhesions and purulent deposits between the cerebellum and medulla. In some cases even the free passage of the cerebro-spinal fluid through the ventricles appeared to be obstructed by large purulent clots.

In the case of one patient artificial respiration was kept up for over four hours, and even then a flickering though slow and irregular pulsation could be felt at the wrist. For over two hours the pulse was quite strong and regular. In another case of tuberculous meningitis artificial respiration carried on for one and a half hours was followed by temporary recovery lasting a good part of a week. Early surgical treatment as soon as lumbar puncture fails offers the only prospect of success in the cerebro-spinal fever cases, but, unfortunately, results even then are not very promising. The pathological conditions already present are very often beyond repair.

I am, Sir, yours faithfully,

D. H. C. GIVEN, M.D., D.P.H.,
Surgeon-Commander, R.N.

July 18th, 1921.

## THE BRUSSELS M.D. FOR BRITISH GRADUATES.

*To the Editor of* THE LANCET.

SIR,—I have received the following official notice: "There will be no more M.D. Brussels examinations held and diplomas for same delivered by the University of Brussels." As the privilege of proceeding to the M.D. Brux. has been enjoyed by British and Colonial candidates for the last 40 years, there is good reason for asking the authorities of the University of Brussels to reconsider their decision. I am therefore preparing a Petition to the University, and should be glad if every medical graduate of the University in all parts of the British Empire would communicate with me, so that I may send in as many names as possible.

I am, Sir, yours faithfully,

ARTHUR HAYDON, M.D. Brux.,
Hon. Sec., Brussels Medical Graduates' Association.

41, Buckland-crescent, London, N.W. 3, July 16th, 1921.

# Medical News.

UNIVERSITY OF MANCHESTER.—The following appointments have been made: Senior Lecturer in Physics, Mr. E. C. S. Dickson, B.A. Camb., Ph.D. Bonn; Lecturer in Systematic Surgery and Assistant to Professor of Systematic Surgery, Mr. W. H. Hey, M.B., Ch.B. Manch., F.R.C.S., L.R.C.P.; Lecturer in Clinical Surgery and Assistant to Professor of Clinical Surgery, Mr. Charles Roberts, M.B., B.S. Lond., F.R.C.S.; Lecturer in Pathology, Mr. Arnold Renshaw, M.D., B.S. Lond., F.R.C.P.; Lecturer in Bacteriology, Mr. J. H. Dible, M.B., Ch.B. Glasg., M.R.C.P. The following awards have been made: Platt Physiological Scholarship, S. L. Mucklow; Dauntesey Medical Entrance Scholarships, F. H. Smirk (First), H. B. Kitson (Second); Dumville Surgical Prize, H. L. Sheehan; Platt Biological Exhibition, Ethel Bunting; John Dalton Natural History Prize, divided between O. D. Hunt and William Leach.

A graduation ceremonial was held on July 14th, at which most of the degrees conferred were in medicine and surgery. Sir Henry Miers, the Vice-Chancellor, in addressing the new graduates, characterised the studies of medical students as the longest and most responsible and exacting of University courses; and it seemed rather hard to the medical student that something was always being added to the course, while nothing was ever taken away. One remedy seemed to be to throw more and more of the preliminary work back upon school life. Nowhere in this country was there a larger amount of material available for clinical experience and research than in Manchester. The doctor had not only to be a skilful and a learned man, but he had also to be a wise man. Perhaps in no other profession was a man or woman called upon to exercise more responsibility and to give more help and advice outside his own work. The University aimed at equipping students for that kind of life. It encouraged the wider spirit of sympathy and interest in all that made up human life, and, above all, it cultivated the spirit of inquiry which was at the basis of all progress.

The Diploma in Public Health has been awarded to the following practitioners: Allan Barrett, K. D. Bean, Mary Boullen, G. F. Bowman, J. W. Chadwick, William Edge, Douglas Fisher, Austin Furniss, Ernest Jones, W. H. Kauntze, Emily M. Peach, A. W. Ritchie, W. R. N. Smithard, R. J. Staley, and William Stott.

At examinations held in July the folowing candidates were successful:—

FINAL M.B. AND CH.B. EXAMINATION.

S. Almond, *§G. V. Ashcroft, Martha F. Barritt, E. C. Berg, Nancy E. Bleakley, ‡Muriel Coope, T. E. Coope, Eugenia R. A. Cooper, S. W. Drinkwater, Winifred M. Edgehill, T. M. Fisher, Kathleen M. Fullerton-Bailey, E. Gleaves, W. H. Gratrix, Ruth Hill, C. D. Hough, Violet M. Jewson, R. R. Lane, Eva G. le Messurier-Kneebone, C. Nelson, L. S. Potter, W. L. Powell, Harriet R. Reid, Annie Rothwell, †‖H. L. Sheehan, *†‡‖Margaret Single, H. Stafford, *S. Wand, S. Waterworth, and R. Williams.

* Awarded distinction in Medicine. † Awarded distinction in Surgery. ‡ Awarded distinction in Obstetrics. § Awarded First-Class Honours. ‖ Awarded Second-Class Honours.

DIPLOMA IN DENTISTRY.

*Final Examination.*—R. Ackers, D. M. Barnes, Elizabeth Benson, C. C. Breakell, P. A. Gardner, W. Garstang, H. B. Kirkbride, J. C. Knowles, H. Laslett, R. A. Lewty, J. H. Spedding, G. Stirling, R. M. Timperley, J. E. Thornton, Gracie Walker-Anderson, S. Whitworth, and W. R. Williams.

UNIVERSITY OF LIVERPOOL: FACULTY OF MEDICINE.—The following candidates have been successful in examinations recently held:—

DEGREE OF M.D.

N. B. Capon, R. W. Gemmell, W. E. Huff-Hewitt, W. A. Jackson, and C. V. Pearson.

DEGREE OF CH.M.

J. St. G. Wilson.

DEGREES OF M.B. AND CH.B. (HONOURS).

*Class I.*—*†G. W. Phillips.

*Class II.*—G. P. F. Allen, ‡A. V. Campbell, *S. B. Herd, *Isabel E. Imison, *M. Newman, and *S. V. Unsworth.

FINAL EXAMINATION FOR M.B. AND CH.B. DEGREES.

*Part I.*—B. Abelman, G. C. Bhatia, R. H. Blair, R. L. Blair, N. B. Cooke, W. H. A. Dodd, J. O. Edwards, E. H. Glynn, C. B. Lewis, I. Lloyd, J. R. Parry, G. F. G. Prideaux, and J. K. Reid.

*Part II.*—‖Ethel Ashton, E. W. Ashworth, Eudora V. Beatty, R. H. Blair, R. L. Blair, D. Brown, Hilda Cantrell, A. Cathcart, G. Clark, Marie B. Clarke, H. M. Cohen, §‖H. Cohen, §M. J. Cohen, N. B. Cooke, R. L. Corlett, V. C. Cornwall, ‖Helen M. Duvall, J. Elsohn, ‖W. C. Evans, E. Fisher, ‖R. A. Galway, H. S. Gordon, J. V. Hall, ‖S. B. Hall, T. K. Hughes, Hilda F. Jefferson, A. Kefalas, Dorothy E. Knowles, C. L. Kopeland, ‖Eleanor Lancelot, I. Lloyd, ‖N. H. H. Longton, B. L. McFarland, Lilian W. Massey, Annie Mather, ‖Vera M. Mitchell, ‖Annie R. Niven, Mary E. Nosworthy, Muriel Pickering-Jones, E. D. Pridie, ‖Gertrude E. Pugmire, ‖D. Riding, ‖Mary D. Sheridan, ‖J. E. T. Shirlaw, J. E. Sykes, ‖V. T. Thierens, Mary A. Thomas, ‖A. K. P. Tobin, C. Voigt, C. H. Walsh, Dorothy A. Williams, and Grace H. Wood.

*Part III.*—F. H. Alexander, G. C. Bhatia, Doris Brown, W. E. A. Burton, Doris M. Cassady, W. M. Frazer, G. L. Gately, Susan H. Gilchrist, J. Goldberg, Isobel K. Johnstone, R. J. Jones, A. Livingston, H. R. Madan, J. B. Oldham, T. R. Roberton, S. S. Skri-Kent, C. Voigt, and T. A. Williams.

DIPLOMA IN PUBLIC HEALTH.

W. H. Brown, M.B., Ch.B., Gladys E. Chambers, M.B., Ch.B., B.A.O., J. H. Crane, M.D., A. Hamid, M.B., B.S., Dorothea E. Hewitt, M.B., Ch.B., Mary A. McHugh, M.R.C.S., L.R.C.P., R. Nixon, M.B., Ch.B., C. M. Ram, M.B., H. Rawsthorne, M.R.C.S., L.R.C.P., and Dorothy M. Unsworth, M.B., Ch.B.

* Distinction in Obstetrics.
† Distinction in Medicine.
‡ Distinction in Surgery.
§ Distinction in Forensic Medicine and Toxicology.
‖ Distinction in Public Health.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE SCHOOL OF PHYSIC.—At examinations held recently the following candidates were successful:—

FINAL MEDICAL EXAMINATION.

*Part I., Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene; Pathology and Bacteriology.*—*John C. Earl, *James O'N. McKenna, *Paul J. Grobler, *George F. T. Saunders, *William F. Whaley, *Robert H. Micks, *Robert T. Jackson and *Matthys P. Louw (equal), Dermod H. F. Milmo, Max Wulfsohn, Douwe M. Vellema, Reginald Hegy and John Ditton Wicht (equal), Mauritius M. Viljoen, Michael Gallivan, Louis J. Coetzee and Lazarus Heyman (equal), Alice M. A. Downing, John H. J. Stuart, David L. H. Moore, Jan H. Rauch, Rupert L. Hill and Frederick W. G. Smith (equal), William S. Dixon, Cecil de Lisle Shortt, Cecil G. S. Van Heyningen and Barend Vivier (equal) and Alexander Bernstein.

*Pathology and Bacteriology.*—Samuel Wilfrid Russell and Herbert Hall.

*Materia Medica and Therapeutics.*—Robert Nelson Perrott.

*Materia Medica and Therapeutics; Medical Jurisprudence and Hygiene.*—Joseph Harte.

*Part II., Medicine.*—*Margaretta T. Stevenson, Alida C. Burt and Alice E. Lawlor and Albert E. Phillips (equal), Richard V. Dowse, Constance McIlrath, Albert V. J. Russell, James Devane, John D. Thompson, Doris Holland, Emily E. G. Baillie, John C. Brennan, Michael R. Coolican. Robert R. Baker, William H. Smith, Gideon C. Malherbe, and John M. Semple.

*Midwifery.*—*Cyril J. U. Murphy, *Izak G. Sacks, *Cornelis D. Dijkman and *Albert V. J. Russell (equal), *Doris Holland, Gilbert M. Irvine, Beryl F. E. Cockle and Theunis de Bruijn and Daniel Hugo (equal), Emily E. G. Baillie, Charles Theodore de Mornet Villet, Cecil S. Wilson, Francis Malone-Barrett, Cecil de Lisle Shortt, Hector C. C. Deane, Francis M. Hilliard, Thomas W. Panter, Max Elion and George C. B. Robinson (equal), Margery Bouchier-Hayes, and William S. Dickson.

*Surgery.*—*Eric Sealy Horgan, Lionel Wigoder, Edith F. Willock, Eric R. Murray and Albert V. J. Russell (equal), Olive V. Fair, Nannette Norris, Albert S. Bradlaw, Alice E. Lawlor, Patrick M. J. Bobbett and Anthony D. Ward (equal), and John M. Semple, Michael R. Coolican, and James C. Davis.

* Passed on high marks.

DIPLOMA IN PUBLIC HEALTH.

*Part I., Chemistry, Bacteriology and Pathology; Physics and Meteorology.*—Edward D'A. McCrea and Richard P. Pollard (equal), Alan G. Wright, and William B. J. Pemberton.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—The following have been elected to Burney Yeo Scholarships: H. A. Robertson, M.A., Balliol College, Oxford; R. Cove-Smith, B.A., Gonville and Caius College, Cambridge; L. C. Whitworth, B.A., Downing College, Cambridge. On the results of the June examination the following awards have been made: Senior Scholarship (£40), Tanner Prize (£10), Todd Prize (Medal and £4 4*s.*), and Class Prize in Diseases of Children, R. C. Lightwood; Class Prize in Orthopædic Surgery, J. W. Hirst; Class Prizes: Medicine, H. Moos; Forensic Medicine and Hygiene, M. W. Hubble; Psychological Medicine, E. Murgatroyd.

BELGIAN RED CROSS.—A letter has been addressed by Dr. A. Depage, the President of the Belgian Red Cross Society, to every physician in Belgium announcing the adhesion of the Society to the League of Red Cross Societies, and stating that the peace-time activities of the Red Cross cannot be put on a satisfactory basis until the membership is multiplied tenfold. In view of the important part which physicians must play in the future Red Cross activities a special appeal is made for their support in the formation of local committees. The letter appears in full in *Le Scalpel* for June 4th (p. 463.)

LEAGUE OF RED CROSS SOCIETIES.—The meetings of the Medical Advisory Board, consisting of Sir George Newman (England) in the chair, Prof. Cesare Baduel (Italy), Prof. Léon Bernard (France), Prof. Th. Madsen (Denmark), Dr. Prochaska (Czecho-Slovakia), Dr. Linsly R. Williams (United States), were held at Geneva, and lasted from July 5th to 7th. It was decided to concentrate the efforts of the League upon "public health objectives obtainable through the medium of Red Cross effort . . . coöperating as closely as possible with all official and voluntary agencies having the same purposes in view." Special attention is to be paid to the development of public health nursing, and to the problems of child welfare, tuberculosis, and venereal diseases. The *International Journal of Public Health* has given such good promise of filling a recognised need that it is to be continued substantially along its present lines The Board was so impressed with the success of the international conference on venereal diseases recently organised by the League that they recommend that similar conferences be arranged in child welfare. The continuation of regional conferences on venereal diseases is also recommended.

DIPLOMA IN NURSING AT THE UNIVERSITY OF LEEDS. The reputation of Leeds as a training centre for nurses has been for many years a high one. The General Infirmary affords opportunities for acquiring a knowledge of all branches of nursing; and especially during the last few years there has been a steadily growing desire on the part of the board to supplement the practical training by the teaching of principles. The nurses are appointed by the board on the recommendation of the lady superintendent; they may enter at the age of 20, and in some instances they have been admitted at the age of 19. For their first three months they work as "pupil nurses," and of this time six to eight weeks is spent in the preliminary training school. If at the end of this time they are found satisfactory and have passed a medical examination as to their physical fitness they are admitted to training as probationers and continue in that capacity for 12 months, the time spent as pupil nurse counting as a part of that period. If at the end of the 12 months they are still considered efficient they sign on for a further period of three years. It will, therefore, be seen that the period of training extends over four years and no nurse now gets a certificate on a shorter course of training. The institution of the preliminary training school has been a great success; under the careful and personal supervision of the special sister tutor the pupils are introduced to the alphabet of the subject, those who have no aptitude for the work are sifted out, and experience has shown that a nurse becomes of more use to the infirmary in a shorter period than during the old régime when the probationer found herself in the wards from the beginning. During the years of her training the nurse attends a carefully graduated course of instruction. Lectures are given by the members of the professorial staff of the University, many of whom are, of course, on the infirmary staff, and practical demonstrations are given in the wards and in the post-mortem room. Care is taken to secure the widest possible variety of training, but at the same time those who show special predilections for medical or surgical work are encouraged to specialise towards the end of their training. A large number of nurses who have passed through the training of the General Infirmary now occupy positions of responsibility and of trust in the nursing world, and special facilities are given to selected nurses to acquire a knowledge of housekeeping and of hospital administration. Some time ago the University of Leeds was approached with a view

to the institution of a diploma in nursing, and regulations have been framed to this end. The standard of general education of the candidates required will be high, the hospital training must extend over a period of four years, and before candidates are accepted from the nursing staff of any hospital the University must be satisfied that the training given is adequate. In the first instance the candidates will be probably drawn exclusively from the nursing staff of the General Infirmary at Leeds. The regulations are, indeed, framed upon the course of training which has been in force there for some years, but it is not intended by the University to exclude candidates from elsewhere, though some residence and some attendance on lectures delivered at the University is required from all candidates. The hospital certificate of training given to nurses who have passed through their training satisfactorily will, of course, continue; the diploma carries the nurse a step further, and it is intended that it shall rank as a definite mark of distinction. The regulations for the diploma, for which a fee of £5 is required, will be furnished on application to the University.

THE LATE DR. JAMES SMART, OF ABERDEEN.—The death took place suddenly on July 13th, while on a holiday visit at Kyles Hydro, Rothesay, of Dr. James Smart, a well-known general practitioner in Aberdeen. Dr. Smart, who was 48 years of age, was a native of Oldmachar. He was educated at Elgin and Aberdeen University, where he graduated M.A. in 1894 and M.B., Ch.B. in 1899. He had been in practice in Aberdeen for 22 years. On the outbreak of war he was appointed registrar at the 1st Scottish General Hospital with the rank of captain. Soon afterwards he was promoted to the rank of major, and in 1916, when Lieut.-Colonel Mitchell, the O.C. of the hospital left for service overseas, Major Smart succeeded him in command with the rank of lieutenant-colonel. In 1918 he took over temporarily the command of Bangor War Hospital, and later proceeded to London, where he commanded the 4th General Hospital. A cheerful, courteous, and many-sided man, Dr. Smart's untimely ending has come as a shock to numerous friends.

HOSPITAL CONDITIONS IN BRISTOL.—As in other cities, so also in Bristol, the voluntary hospitals are in financial straits. The Royal Infirmary is issuing an appeal which states that there is a debt of £70,000 to be paid off, and suggests that this might very properly be regarded as a war memorial, since it was in the infirmary buildings that much of the work of the 2nd Southern General Hospital was carried on. As was recently stated in our columns Mr. H. H. Wills, the president of the hospital, has given £100,000 in securities to the infirmary, but this is intended as a permanent endowment and not as an extinction of accumulated debt. The plans for collection of payments from patients have come into operation, both at the Royal Infirmary and at the General Hospital, during the past week, and this has already called forth from one large firm—that of Messrs. J. S. Fry and Sons—a double response which may well furnish a valuable precedent not only in Bristol but elsewhere. In the first place, the directors undertook to pay the standard charge—£1 1*s.* per week—for any employee admitted to either hospital for in-patient treatment. Secondly, the employees have now formulated a scheme for the deduction of 2*d.* per week from their wages in the place of the present voluntary contribution of 1*d.* per week. The sum thus collected is to be devoted in part to a general contribution to the funds of the hospitals, in part to an amplification of the directors' scheme. This step on the part of the employees is entirely spontaneous, and is most encouraging in view of the fears expressed as to the probable falling-off in workpeople's contributions when a scheme of payment by patients was introduced.

GUY'S HOSPITAL: ANNUAL REPORT.—The report for the year ended Dec. 31st, 1920, shows the number of patients who received treatment in the wards during that period to be 9309, and the number of separate visits of out-patients to be 496,466. The call upon the resources of the hospital was greater than ever; no wards were closed, no facilities for treatment were withdrawn, and the whole services of the institution were fully employed, but the great costs of working, in spite of strict economy, render the future prospect very serious. The expenditure of the hospital was £166,293, against £73,574 in 1913. A reduction in the average stay in hospital from 23·6 to 22 days made it possible to pass through the wards over 500 patients more than in the previous year. The mortality-rate in the wards was 7·2 per cent. The special appeal for further support, addressed to firms and individuals having premises near the hospital, met with an encouraging response; many regular subscribers had increased their benefactions, and nearly 700 new contributors had subscribed, but the income and expenditure account showed a loss for the year of £21,794. The Governors felt that the institution of a compulsory monetary charge to patients would be at variance with the expressed desire of the Founder of the hospital and inconsistent with the spirit of the charity as hitherto maintained; but they saw little objection to asking patients to contribute voluntarily according to their means. Roughly one in three had responded to the appeal now made to each individual patient; a proportion of those who did not contribute wrote explaining that unemployment, sickness, &c., prevented them from doing so. Support in the form of endowment is now greatly needed for the medical school; further, the Governors invite subscriptions to a discretionary fund, donations to which may be used in part or in whole at their discretion for the benefit either of the hospital or of the medical school. While careful that all money contributed for hospital purposes shall be expended only in the relief of the sick poor, the Governors, recognising the importance of the medical school, have opened this fund to be allocated between the hospital and school in proportion to their respective needs.

PREVENTION OF EPIDEMIC DIARRHŒA.—A circular (No. 217, H.M. Stationery Office, price 1*d.*) has been addressed by the Ministry of Health to local authorities carrying out maternity and child-welfare schemes on the subject of the prevention of epidemic diarrhœa. Though the mortality from this disease of infancy has steadily decreased, a hot spell such as that through which we are at present passing may cause a sudden and serious rise. In view of the fact that epidemic diarrhœa is essentially a disease of urban communities, and is more liable to affect areas unprovided with satisfactory water closets, it is desirable to make sure that accumulations of dust or refuse, and the contents of privies, pail, or tub closets are removed frequently, and that foodstuffs are screened from flies. In the event of a threatened epidemic of diarrhœa local authorities are advised to suspend routine home-visiting and welfare work, and to employ the total available staff in an attempt to prevent the spread of infection and in the nursing treatment of sick infants. Mothers should be instructed to continue breast feeding during the hot months, and to apply early for medical advice. Voluntary notification of the disease to health visitors by the mothers, and to the local authority by medical practitioners, will ensure arrangements for immediate assistance in nursing. Domiciliary nursing should be provided where possible, in order that the instructions of the medical practitioner in charge of the case can be carried out, and disinfectant solutions provided for soiled clothing. Hospital accommodation should be made available for children who are seriously ill in special wards.

THE LATE DR. REYNOLDS RAY, OF DULWICH.—Dr. Ray, who practised for many years in Dulwich and afterwards in London, died at the age of 79 on July 8th. He was in busy practice to within six months of his death, retaining a vigour of mind and body unusual at his age. He was educated at Guy's Hospital, qualifying M.R.C.S. Eng. in 1863 and subsequently becoming house surgeon at Guy's. He left hospital to help in the practice of his father, whose health had begun to fail; otherwise he might have obtained some position on the staff of the hospital, since he was one of the best students of his time. He was greatly respected, trusted, and beloved by many, and held for a long time a leading position in Dulwich. Dr. Ray was a sportsman, an expert fisherman, and a good shot and whip. As a breeder of bloodhounds he took prizes with dogs which became famous, and for 50 years he was a member of the Kennel Club. He became a special constable during the war and led his section at the parade before the King. As just 60 years previously he marched in review of the newly raised Volunteers, he had a record few could surpass. While taking night duty three times a week with charge of the ambulance, Dr. Ray attended daily at the Horton Military Hospital at Epsom. Here he won the esteem and affection of patients and staff alike, and here he worked throughout the epidemic of influenza. A sound practitioner, a warm-hearted, sincere friend, a man of high ideals, and a thorough sportsman, he will be missed by a large circle of friends.

EAST SUSSEX HOSPITAL.—At the eighty-first annual meeting of the hospital on June 29th it was reported that but for extraordinary income the deficit on the year's working would have been £4096. Since November last patients had been asked to contribute a minimum of one guinea per week towards their maintenance, and while this had somewhat alleviated the financial distress the Committee felt that they must continue to look to subscribers and donors for their support in order to make way against the ever increasing difficulties. Reference was made to the report of Lord Cave's Committee. Lord Eustace Percy said in the first place they had to face this fact—that the Government, and, he thought, the majority of public opinion throughout the country, was very strongly in favour of retaining the voluntary principle; and in the second place

they had to face the fact that any temporary subsidy which might be given towards the maintenance of voluntary hospitals, apart from any interference with them was practically certain to be less even than the urgent needs of these hospitals. Lord Cave's Committee had recommended a subsidy of one million pounds, but it was stated that the Government proposed to give only half a million, and that, Lord Eustace Percy thought, was the limit of what the voluntary hospitals could expect to receive. The position of the East Sussex, as of all hospitals at the present time, was a serious one. A very large increase of voluntary support was needed, especially in view of the approaching removal of the hospital. The in-patients during the year reached the record figure of 1075. The out-patients numbered 4285, a slight decline, but the number of out-patients' attendances, 51,525, showed a considerable increase. This increase was largely accounted for by the new massage and electricity department which had been installed, in addition to which the hospital was now equipped with radiant heat and ultra-violet rays. The announcement was made at the meeting that the erection of the new hospital had already been commenced.

Mr. E. Gerald Stanley, M.S.Lond., F.R.C.S.Eng., has received the Doctorate of the Faculty of Medicine of Paris with honours.

DONATIONS AND BEQUESTS.—The Chelsea Hospital for Women has received £105 from Mr. and Mrs. Sannyer Atkin towards its nurses' home.—Under the will of the late Mr. John Boultbee Brooks, of Finstall Park, Worcester, the testator gave £1000 to the Children's Hospital, Birmingham; £500 each to the General Hospital, Birmingham; Queen's Hospital, Birmingham; the Cottage Hospital, Hinckley, and the Cottage Hospital, Bromsgrove.

BRISTOL MEDICAL COMMITTEE.—In July 1919, the practitioners of Bristol, convened by the local division of the British Medical Association in concert with other medico-political organisations, resolved to elect a "committee, to be called the Bristol Medical Committee, which shall be representative of all sections and interests of the profession"; and authorised the committee thus formed to consider questions relating to medical practice arising within the city, and, with certain reservations, to take necessary action with regard to them. The committee elected in 1919 carries on till early in 1921, when, under its own regulations, a new committee was elected. This new committee was charged with the task of considering the Dawson Interim Report and the applicability of its proposals to Bristol. By way of preparing the ground for so considerable a task the committee decided to take stock of the various forms of medical service already at work in the city. To this end medical officers in charge of these services have been invited to address the committee, and also to furnish reports on the work of their respective departments. This invitation has been accepted very willingly, and several valuable addresses have already been delivered. It is hoped that at the end of the session a comprehensive report may be prepared so that all the possibilities of a coördinated plan of medical service within the city may be fully examined.

THE LATE DR. EDGCUMBE BURROWS.—The death of Dr. W. Edgcumbe Burrows, district surgeon of Bothaville, South Africa, and acting district surgeon of Kroonstad and district, took place in April at Kroonstad. Dr. Burrows was the eldest son of the Rev. J. Burrows, of Walsall, and was born at Dudley, Worcestershire, in 1882, receiving his education at Bath and Durham University. He took the degree of B.Sc. in 1902, and entered the Middlesex Hospital, obtaining his M.B., B.S., in 1906. He married Miss E. Clare Williams, the only daughter of the late Captain Williams, of Clifton, in the same year, and for the following eight years practised at Manor Park, London, taking the degree of M.D. London in 1913. He joined the Royal Army Medical Corps in March, 1915, and served in France until 1917, being mentioned in despatches in June, 1916, for conspicuous bravery under heavy fire. In 1917 Dr. Burrows was sent to German East Africa, and was slightly wounded and again mentioned in despatches for bravery, attention, and care of wounded under very heavy fire. Later he had charge for a time of the 19th Stationary Hospital in Portuguese East Africa. After demobilisation he joined the South African Medical Corps, being stationed at Wynberg and afterwards at Pretoria; he resigned in January, 1920, and proceeded to Bothaville to act for Dr. W. A. Carden (during the latter's absence in Europe) as district surgeon for the Bothaville area. Here he was joined by Mrs. Edgcumbe Burrows and son, who arrived from England during 1920. Dr. Burrows won the respect and affection of all sections of the community by his unselfish devotion to duty, and his untimely death is regretted in Bothaville and throughout the district.

# The Services.

## SHIPS' LAUNDRIES.

THE Admiralty is steadily increasing the comfort of the sailors in their ships. Laundry machinery is now to be fitted in the *Queen Elizabeth* and other large ships.

## HEALTH OF THE FRENCH NAVY IN THE WAR.

The following account of the health of the French Mediterranean Fleet during the war is taken from a review in *Arch. de Méd. Militaire*, of an article by a naval medical officer. The average complement was 33,788—the sick list 1022, the deaths 5·17, and the invalidings 70, in every 1000 men. Anæmia, always prevalent amongst the engine-room staff, was more frequent during this period, as the ships were so constantly under steam. There were 12,115 cases of influenza in 1918 with 196 deaths. Antityphoid vaccination had an excellent effect, more conspicuous in the second half of the war. Prophylactic quinine diminished malaria. Tuberculosis attacked 4 per 1000, and many cases called anæmia may well have been early cases of tuberculosis. Venereal diseases were fewer than in peace, and were reduced by regulating prostitution or by compulsory prophylaxis. Arseniuretted hydrogen, given off from the accumulators of submarines, caused trouble in 1916 particularly, 26 cases in one of these craft and 27 in another in that year. Many men were invalided home because they were simply worn out. The large cruisers are healthy; the large battleships have too little light and air, and they are overcrowded. Steel decks are unsatisfactory, being often too cold or too hot; they must be sheathed in non-inflammable wood, as in England and Germany. Larger steam radiators and heavier clothing are needed in cold climates. Douche baths have been fitted in some ships; the sailors generally wash still in the bucket, long ago condemned. Disinfectors are not numerous enough; washing machines are asked for. Refrigerating chambers have made it unnecessary to carry live animals to sea, and this should be forbidden, as it causes nuisance.

## ARMY MEDICAL SERVICE.

### TERRITORIAL FORCE.

Capt. (Bt. Maj.) C. H. S. Frankau resigns his commn. and is granted the rank of Col.

## ROYAL ARMY MEDICAL CORPS.

Capt. D. T. M. Large relinquishes the temp. rank of Maj.
Capt. H. A. Crouch is placed on the h.p. list.
Capts. W. P. Mulligan, H. Bedingfield, and W. McM. Chesney retire, receiving a gratuity.
Capt. E. J. Mannix is secd. for service under the Foreign Office.
Temp. Capt. G. W. Will to be Capt.
Temp. Capts. J. J. Clarke and D. R. Alexander relinquish their commns. and retain the rank of Capt.

### ARMY DENTAL CORPS.

The undermentioned to be Capts.: Lt. (temp. Capt.) W. A. Rankin.
Flight Lts. from R.A.F. Dental Branch: G. T. Charles and D. H. W. Williamson.
The undermentioned to be Lts. with the temp. rank of Capt. but without the pay or allowances of that rank: Temp. Capt. P. E. Brown, Dental Surg. from Spec. List, and Flight Lt. A. Williams, from R.A.F. Dental Branch.

### SPECIAL RESERVE OF OFFICERS.

Capt G. G. Allan relinquishes his commn. on account of ill-health caused by Mil. Service, and retains the rank of Capt.
The undermentioned Capts. relinquish their commns., and retain the rank of Capt.: S. A. Withers and A. B. Grant.

### TERRITORIAL FORCE.

Lt.-Col. A. D. Moffat, having attained the age-limit, is retired, and retains the rank of Lt.-Col.
Capt. C. H. Welch to be Maj.
Capts. W Leslie and K. B. Dickson (late R.A.M.C.) to be Capts.
Capt. J. J. Scanlan, having attained the age-limit, is retired, and retains the rank of Capt.
Capt. C. H. Allen resigns his commn. and retains the rank of Capt.
5th S. Genl. Hos.—Capt. T. Holmes resigns his commn. and retains the rank of Capt.

### TERRITORIAL FORCE RESERVE.

Maj. W. A. Wetwan, having attained the age-limit, is retired, and is granted the rank of Lt.-Col.

### DEFENCE FORCE.

S. Midland San. Sect. (D.F.).—To be temp. Capt.: W. H. S. Dunn.
3rd (S. Midland) Fd. Amb. (D.F.).—To be temp. Capt.: B. Astley-Weston.
1st (E. Lancs.) Fd. Amb. (D.F.).—Temp. Maj. R. MacKinnon (Capt., R.A.M.C. (Spec. Res.)) relinquishes his temp. rank.

# Parliamentary Intelligence.

## NOTES ON CURRENT TOPICS.

*Clinical Thermometers Bill.*

THE test has been issued of the Clinical Thermometers Bill which was recently introduced by Mr. BALDWIN, President of the Board of Trade, into the House of Commons. The administration of an Order made by the Ministry of Munitions requiring that clinical thermometers should be tested and marked before sale was transferred to the Board of Trade in June, 1919, and the Order was discontinued as from April 1st, 1921, by the Ministry of Munitions (Cessation) Order, 1921. The present Bill proposes to place the requirement on a permanent statutory basis. The testing of clinical thermometers will be undertaken by the National Physical Laboratory, which performed all the testing required during the war. As the fees charged by the National Physical Laboratory for testing clinical thermometers will cover the cost, the Bill will not involve any charge upon public funds. The penalty for an offence under the Act is a fine not exceeding £10.

## HOUSE OF LORDS.

TUESDAY, JULY 19TH.

*Coroners (Remuneration) Bill.*

The Coroners (Remuneration) Bill was read a second time.

*National Health Insurance Bill.*

The National Health Insurance Bill was read a third time and passed.

## HOUSE OF COMMONS.

TUESDAY, JULY 12TH.

*Deaths from Vaccination.*

Mr. WATERSON asked the Minister of Health whether the letters addressed to medical men who had certified deaths as due to vaccination, and the visits of medical officers of the Ministry to make personal inquiries into the circumstances, had resulted in an alteration of the death certificate; and, if so, in how many cases had this occurred.—Sir A. MOND replied: The answer to the first part of the question is in the negative, and the second part does not therefore arise.

*Homes for Shell-Shock Cases.*

Brigadier-General SURTEES asked the Minister of Health whether there was now any prospect of the establishment of homes for those ex-Service men who were mentally afflicted owing to shell-shock, and who were now confined in company with certified lunatics.—Sir A. MOND replied: I am informed that the Board of Control is not aware of any ex-Service men in asylums or hospitals for the insane other than those who have been certified as insane. Amongst them there are cases in which insanity has supervened upon shell-shock. There are several neurological hospitals under the control of the Ministry of Pensions where ex-Service patients whose mental symptoms do not amount to confirmed insanity are being treated.

WEDNESDAY, JULY 13TH.

*Treatment of Tuberculosis.*

Lord HENRY CAVENDISH-BENTINCK asked the Minister of Health how much had been spent under the Insurance Act since July, 1912, in the treatment of tuberculosis.—Sir A. MOND replied: I assume that my hon. friend refers only to expenditure on the provision of sanatorium benefit for insured persons under the Insurance Acts. The amount spent in England and Wales upon the provision of sanatorium benefit for insured persons under the Insurance Acts from July, 1912, to April 30th, 1921, the date on which the benefit terminated, was approximately £6,380,000.

*Government of Greater London.*

Mr. JESSON asked the Minister of Health (1) when it was proposed to appoint the committee that was to inquire into the question of Greater London government; and, if the inquiry was not held this year, if it was intended to act upon its findings during the life of the present Parliament. (2) If, having regard to the importance of the fact that the ratepayers of districts that had received the honour of incorporation took a greater interest in public affairs, he proposed to withdraw his objections to the incorporation of Walthamstow in the event of the inquiry into the government of Greater London not being held this year.—Sir A. MOND replied: As has already been stated in reply to previous questions the Government are considering the question of instituting an inquiry into the local government of London and Greater London. Until a decision has been reached I am unable to add anything to the answer I gave my hon. friend on July 6th with regard to the incorporation of Walthamstow.

*Poor-law Children in Sick Wards.*

Mr. ANEURIN WILLIAMS asked the Minister of Health the total number of in-door Poor-law children, the number of children over and under 3 years of age who were in sick wards and other wards, respectively, of workhouses, and the number of children in receipt of out-door relief on Jan. 1st, 1921.—Sir A. MOND replied: The number of children in receipt of institutional relief on Jan. 1st, 1921, was 60,672. Of these there were: In sick wards of workhouses, over 3 years of age, 2365; under 3 years of age, 2505. In other wards of workhouses, over 3 years of age, 2553; under 3 years of age, 3365. The number of children in receipt of out-door relief (including children boarded out) on the same date was 174,097.

*Dismissal of Nurses at Steyning Infirmary.*

Mr. THOMAS GRIFFITHS asked the Minister of Health whether it had been brought to his notice that two nurses in the Poor-law services at Steyning Infirmary, Brighton, having passed their examinations, had been dismissed at a few hours' notice, and refused their certificates; whether he was aware that a member of the committee appointed to inquire into the matter stated that he had found the charges made against them to be without foundation; and whether, as the shortage of nurses was so great that it was a matter of public importance that suitable women should not be discouraged from entering the nursing profession, he would hold an inquiry into the matter.—Sir A. MOND replied: I am informed by the Board of Guardians that they appointed a special committee to inquire into this case, and that the committee came to the conclusion that the charges made against the nurses had been proved, and that they had been guilty of gross unkindness to a patient, and also of insubordination. I am also informed that the guardians have decided to furnish the nurses with an extract from the minutes of the Board, stating that they had passed the examination. In these circumstances I do not think that any useful purpose would be served by my directing a further inquiry into the matter.

*Merchant Seamen and Venereal Disease.*

Mr. MILLS asked the Minister of Health if he was aware that British seafarers still suffered under disabilities unshared by their fellow-countrymen or by foreign seamen in being penalised if they sought treatment for venereal disease, and that the British representatives at the meeting of the health section of the League of Nations were advocating international facilities for the free treatment of seafarers; and if the Government would consider the desirability of amending the Merchant Shipping Act, 1906, Section 34, subsection (1), as desired by all interests concerned.—Sir A. MOND: As regards the first part of the question I would refer the hon. Member to the reply to the same question on April 26th last. As regards the second part I understand that my right hon. friend the President of the Board of Trade proposes to include a clause for this purpose in the next general Merchant Shipping Bill.

*Children in Village Communities, &c.*

Mr. HASLAM asked the Minister of Health whether he would state the number of children maintained under each of the three following systems on Jan. 1st, 1921: Poor-law schools, village communities and grouped cottage homes, and scattered homes.—Sir A. MOND replied: The number of children in the following classes of Poor-law establishments for children on Jan. 1st, 1921, were: schools, 7429; grouped cottage homes, 11,793; scattered homes, 7946; other separate homes and insitutions for children (including a training ship), 4224.

THURSDAY, JULY 14TH.

*Medical Services in the Colonies.*

The House went into Committee of Supply on a vote of £529,104 for the salaries and expenses of the Department of the Secretary of State for the Colonies, Mr. JAMES HOPE in the chair.

Sir D. MACLEAN moved that sub-head A (salaries, wages, and allowances, £145,143) be reduced by £500.

Mr. E. WOOD (Under-Secretary for the Colonies) said they ought never to forget that whether the human race was at peace or at war, the warfare that the lower creation, in its instinctive task of carrying and disseminating disease, waged upon it was perpetual and unrelenting, and that in that warfare there was no neutrality. To anybody who would investigate them the discoveries that had been made, and the successful efforts that had been put forth in that field during the last 20 years formed a real romance, but quite frankly he said that as far as he had been able to form a

judgment it was quite impossible to rest upon their oars or to profess any satisfaction with the state of health in many parts of our Colonies, where the mortality of British subjects was what it was to-day. Indeed, he thought that those by whose efforts and self-sacrifice the results already attained had been won would be the first to acknowledge how comparatively slender was the advantage that we had hitherto gained. He expressed his thanks and the thanks of the Government to a committee presided over by Lord Chalmers, which had recently reported, and which had for its object to inquire into how best to link more closely the problems of research in the Colonies with universities and other allied institutions in this country. More and more forces in different parts of the world were being mobilised in the pursuit of disease. The London and Liverpool Schools of Tropical Medicine in one way or another were doing work in the West Indies and in West Africa. Ceylon, he was told, was in active pursuit of malaria. Mauritius had set aside 10,000,000 rupees, and had been fortunate in enlisting the services of a great medical scientist, Dr. Andrew Balfour, to advise as to how best that money might be applied. In this warfare there were neither national nor racial boundaries. It was with the keenest pleasure that the Colonial Office was able a few weeks ago to welcome the representatives of the International Health Board of the Rockefeller Foundation, who came over from the United States to confer with them as to the possibility of closer coöperation in their beneficent and valuable work, and he had every hope that from these consultations extremely important results would emerge. Wherever they began to tackle the problems of research, or of its application, they were every time confronted with the question of medical personnel. In this matter also his right hon. friend had had the assistance of another strong committee presided over by a very distinguished administrator of ripe experience, Sir Walter Egerton, and of the recommendations made by those gentlemen some had already been adopted, and he hoped as time went on they would be able to make further progress in adopting others. The problem was not an easy one. The unification of a colonial medical service was not easy. In all these matters of administration the Colonial Office was dealing with some 40 to 50 different governments, in an infinite variety of conditions, and infinitely differing in their financial resources, and in these days in nearly all reforms the depth and length of the purse was the deciding factor. He looked to a progressive improvement in the field of human life, which was one of the great fields in which great work remained to be done.

Sir S. HOARE said he agreed with Mr. Wood that medical administration was the most important service of any of our tropical administrations. On making inquiry into medical administration in the West Indies and comparing it with what the Americans had done in Panama, or with, indeed, what they had done in a lesser degree in countries like Guatemala, he was afraid they would find that our medical administration had lagged behind. He wished to see a High Commissioner go to the West Indies.

Lieut.-Colonel FREMANTLE said that physical health was the greatest essential in the development of the Colonies of our vast Empire. Therefore he warmly welcomed the statement of the Under-Secretary as the most satisfactory that had ever been made to the House. It was full of hope, but there was need for a great deal of backing, and he did not feel at all satisfied that the good intentions would be carried into effect. It was essential to see that medical service throughout the Empire was more efficiently run. The need for this was originally put forward by Joseph Chamberlain when he was Secretary of State for the Colonies, and his grant to the School of Tropical Medicine was the first public recognition by the Government of the need of this work. The school had prospered, but he would like to bring the Committee face to face with the point of view of the non-medical men who were engaged in the Colonial Service themselves, and who saw how any deficiency in the medical service affected them. They felt a grievance that officers who joined the Service on the understanding that their medical attention was going to be provided found themselves, after many years of service, at a distance of perhaps 50, or 100, or 200, or even 300 miles in the bush away from a medical officer, not because he could not be provided, but because at the present time there was a deficiency of medical officers which was not being made good. Their aim should be to raise the somewhat out of the way colonies to such a stage by bachelor development that men could safely take out their womenfolk and their children. In order to do that they must supply proper medical attendance. The position could be best summed up in a letter from one resident to another, from which he quoted the following:—

"During the war there was an excuse for the shortage of medical officers, but now there appears to be an absolute indifference on the part of the Colonial Office, and no attempt is made to fill the vacancies. The neglect of the enormous amount of work to be done is very disheartening, and the men out there can only touch the fringe of their work. I stopped at one place and found a sufficient number of cases to keep a man going for a fortnight. I wish you would all send in a united protest. Medical attention is promised on appointment, and this should be shouted from the housetops."

The matter had been taken up by the Colonial Office, and he had asked for a definite return which the Under-Secretary supplied on July 4th as regards the deficiencies in the Service. It dealt with all the different services, and showed a deficiency of 114 vacancies on a strength of about 600. On the West African Medical Staff the total strength was 152, a deficiency of 68 on July 1st: it did not include 15 natives not attached to the medical staff and four dentists who were also excluded. That was a serious shortage, and exemplified all other countries. The complaints were even worse in some of the smaller colonies. In many cases there was held out to the medical officer the promise of private practice, and he was paid some £300 or £400 to do special Government duty. That was a misleading arrangement which had proved to be ineffective, because if there was any private practice the medical officer gave it as much time as possible and as little as possible to his Government duties. In many instances there was no real private practice, and there had been two or three cases where men, feeling that they had been misled, returned home. The official attitude was that some of the recommendations of the Departmental Committee had been granted and others might be granted. That was very vague, and he should like some more definite assurance. The pay in the West African Medical Service had been improved, but it was still glaringly insufficient. He contended that they should build up a medical service for the whole of the Colonies and that it should be under the Government. Members should have a good initial salary and a proper chance to get work. They should be entitled to pensions and gratuities, together with free passages for their families. He again protested against the way in which these things were considered in watertight compartments as different services of the Crown. The Departmental Committee had again pressed for some consideration to be given to the possibility of a United Government Medical Service, with definite terms of service. If this could be brought about it would effect an enormous saving, and it would help imperial development a thousand fold.

Mr. CHURCHILL (Secretary of State for the Colonies), replying to points raised in the debate, said that he agreed with Mr. Wood that great as had been the progress that they had seen in the last 20 years they had only just begun to assert and establish the mastery of science over the jungle of diseases. He had been told of a method of destroying the larvæ of a particular mosquito by means of cows. The mosquito laid its eggs in the protecting grasses at the very edge of the water and stretched out into the water, and in this position it was protected from the depredations of a small fish which otherwise devoured it with avidity. But on the introduction of the cow into the area the grass was cropped and nibbled close to the water's edge, and the fish immediately attacked the larvæ. He could not guarantee the exact scientific accuracy of the illustration, but it served as an example of the kind of warfare which was being waged with an increasing measure of success.

On a division the motion to reduce the vote was negatived by 123 votes to 43, and the vote was then agreed to.

### *Aggravated Disability Cases.*

Mr. CAPE asked the Minister of Pensions what was the number of pensions originally awarded as attributable to war service which had, during the 12 months ended June 30th this year, been altered to aggravated, and the number of pensions assessed as aggravated which had been altered to aggravation passed away.—Mr. MACPHERSON replied: I regret that I am unable to give the desired figures, but my hon. friend will, perhaps, be interested to learn that a recent test made for a period of seven weeks showed that less than 2 per cent. of the cases dealt with are changed on re-boarding from "attributable" to "aggravated."

### *Commissioners of Medical Services and Temporary Grants.*

Lieut.-Colonel HURST asked the Minister of Pensions whether he was aware that the provision in the local committee's handbook enabling committees to give temporary grants pending awards by appeals tribunals was practically a dead letter in consequence of the failure on the part of the Commissioners of Medical Services to notify the result of the medical boards to the committees, which was a condition precedent to any such grants; whether he was aware that in only 6 of the 300 Manchester cases now awaiting hearing by the appeals tribunals had such notifications been made; and whether he would take steps to redress this grievance.—Mr. MACPHERSON replied: I would remind my hon. and gallant friend that advances in these cases are only permissible if the board find in the man's favour, and I have no information to show that the

instructions to boards to notify the local committee in such circumstances are not obeyed. I am, however, having inquiry made into the position in the Manchester area, and will communicate the result to my hon. and gallant friend.

*Men Disabled in Former Wars.*

Sir ROBERT NEWMAN asked the Minister of Pensions whether ex-Service men, who had been totally disabled through service in His Majesty's forces prior to 1914, were receiving the same pension as men totally disabled through services under the Crown since that date; whether the widows of ex-Service men, who lost their lives through service in the forces previous to the recent war, were receiving the same pension as widows whose husbands lost their lives since 1914; and, if not, whether His Majesty's Government would consider the advisability of taking steps to place the older ex-Service men and their dependents on the same footing as the younger ex-Service men and their dependents.—Mr. MACPHERSON replied: Men disabled through service in former wars are now entitled to pension at the increased rates applicable to men disabled in the great war, and the pensions previously in payment to the widows of men who died in former wars have been similarly increased. If my hon. friend is referring to disability or death incurred on military service in peace-time, he should address his question to my hon. friend, the Secretary of State for War.

*Production of Calf Lymph.*

Mr. MILLS asked the Minister of Health how the carcasses of the calves used for the production of vaccine lymph at the Government lymph establishment were disposed of after the lymph had been taken from them, and the animals had been slaughtered.—Sir A. MOND replied: The calves used for the production of lymph at the Government lymph establishment are hired and after slaughter the carcasses are examined by the veterinary surgeon of the establishment. The carcasses sold for food are subject to further examination by officers of the local sanitary authorities. I am advised that there is no evidence whatever that the carcasses of vaccinated calves are unfit for food.

*Government Housing Policy.*

Replying to questions by Mr. HOGGE, Major PRESCOTT, and Mr. TREVELYAN THOMSON, Sir A. MOND (Minister of Health) said that the number of houses built, building, and contained in approved tenders under the housing scheme for local authorities and public utility societies was now about 176,000. Under the scheme of subsidy to private builders the number of houses built or to be built was estimated at about 23,000. The annual cost to the State under the local authorities and public utility societies schemes was about £10,000,000 per annum, and the amount required for payment of subsidies to private builders was about £5,000,000. The Government had decided that for the time being, at any rate, the number of houses to be constructed by local authorities and public utility societies, with Government assistance under the present scheme, would be limited to 176,000. It would appear that on a final examination of the present approved tenders some adjustments would be possible to meet cases of hardship without exceeding this total. All expenditure in connexion with the housing schemes which had already been incurred by local authorities, with the approval of the Ministry of Health, would rank for financial assistance under the present scheme, which limited the liability of local authorities to the produce of a penny rate, and where work undertaken by local authorities, with the approval of the Ministry of Health, could not, for reasons outside the control of the authorities, be completed by July, 1922, the time for completion would be extended by the Ministry as might be necessary. As regarded the scheme of subsidy, payment in full would be made for houses completed within the four months after the expiration of the present Act—i.e., by April 23rd last, and additional houses would only be subsidised if begun before July 1st under a certificate or the promise by a local authority of a certificate. In cases where commitments had been entered into, although construction had not actually been begun, in anticipation of the continuance of the subsidy, he would, in the exercise of his discretion, pay such subsidy in such cases if work was started within six weeks of the present date. The Government recognised the urgent necessity of making what improvements were possible under present financial circumstances in slum areas, and they were prepared to provide an annual contribution not exceeding £200,000 towards the deficiency on local authorities' accounts for the improvement of slum areas. This annual contribution would continue for the whole term of such loans as might have to be raised by local authorities to defray the necessary expenditure. It was the intention of the Government to keep the housing problem closely under review. They fully recognised the importance of that problem from the point of view of the health and social conditions of the people, but it was impossible to incur greater commitments than our finances would allow.

Dr. ADDISON (Minister without portfolio, and formerly Minister of Health, who was responsible for the Government's housing policy until recently) rose and intimated his resignation from the Government in consequence of what he described as "the precipitate abandonment of an effort which is so essential to national restoration." He regarded it as a betrayal of the Government's solemn pledges to the people and of their obligations to the local authorities and to many individual citizens, as well as being calculated to weaken the confidence of the people in the reliability of constituted authority.

Mr. CHAMBERLAIN (Lord Privy Seal), in the absence of the Prime Minister, expressed the gratitude of his late colleagues in the Cabinet to Dr. Addison for the help which he gave them in a difficult work and in a difficult time, and their regret that he should have felt it his duty to sever his connexion with them.

FRIDAY, JULY 15TH.

*Criminal Law Amendment Bill.*

Major FARQUHARSON, in moving the second reading of the Criminal Law Amendment Bill (which has been passed by the House of Lords), said that it was a step in the normal evolution of the law on the subject. In the Bill the limit of childhood was placed at 16, and it was right that the fullest protection of the law should be given to the period of childhood whether in regard to sexual offences or offences under the various Children's Acts. Apart from the question of sexual relationship and as an evolutionary step in legislation, speaking as a doctor, he ventured to submit certain views which he held with regard to the biological and scientific aspect of this question. In the whole range of nature there was in the human mammal an abnormally long period of dependence of the child upon the parent for parental care, and it seemed to him that it was nature's penalty or nature's price for the qualities of latent and potential excellence with which the human race was endowed and which our higher civilisation had cultivated. There was no period during the time of childhood so urgently calling for protection as the period between 13 and 16 years of age. It was that time when strangely enough the sex instinct was appearing in the blossom. That instinct gave an unconscious stimulus to the ego, a desire for independence, a seeking after individuality, a certain degree of rebellion against parental discipline. At that period there was a certain hiatus between parental care and the needs of the child, and it was time when the State should step in to exert every form of protection it could for the child during those tender years. The public health aspect of the Bill appealed very strongly to him. The very conditions in the last half century suggested to him that an enormous amount of physical disability which they found prevalent during the war was directly traceable to the conditions of life during that past half century. He was perfectly certain that an enormous amount of the venereal disease which prevailed—he would go so far as to say 80 per cent.—was transmitted by children and very young persons. From the point of view of its relations to the past, the biological point of view and in relation to public health, he seriously commended this view to the House. No measure would be more fraught with good for the prevention of not only prostitution, but that the whole thing would tend to bring home to the very young the nature of this matter and would save them from embarking on a career of vice. He spoke thus from his medical experience. This was a Bill for the protection of our race and a stepping-stone to a greater and higher physical efficiency than we had secured in the past.

Mr. WIGNALL seconded.

Major CHRISTOPHER LOWTHER, in moving the rejection of the measure, said all of them were equally keen to secure greater morality and better health among the population, and to see that young persons should not have gross offences committed against them. But he did not believe they could cure immorality by legislation; the proper way to effect that was by education and proper protection of the children by parents and guardians, rather than by legislation which was directed to take away from an accused person practically his only defence. He pointed out that it had been shown in a large number of cases in the Assize Courts that young women had not only consented but had incited men to commit offences. The age of 16 was a very arbitrary one. These questions were matters of temperament and nationality. There were in this country a large number of young Indians, Spaniards, and Jewesses who were plying the trade of prostitutes on the streets of London. They had every appearance of being 18 or 19 years of age. He was informed that if this Bill was passed there would be great difficulty in getting a jury to convict in cases of this kind. It was really an appalling thing that in this Bill

no difference was made between a girl who fell for the first time through the dastardly act of a designing man and a girl who had already adopted the life of a prostitute, and who probably herself deceived. Prostitution led to other forms of crime, and it was easy for a girl to make money by blackmail.

Captain LOSEBY seconded the motion for rejection, on the ground that certain clauses of the measure struck at the root of the principle upon which the criminal law of the country was based.

Mr. SHORTT (Home Secretary) supported the Bill, and pointed out that every single provision of it had been approved by a Joint Committee of the House of Lords and the House of Commons. It did not seek to make people moral by legislation, but to prevent them carrying out immoral purposes just at their own will.

After further discussion the Bill was read a second time without a division.

MONDAY, JULY 18TH.

*Anthrax-infected Brushes.*

Major KELLEY asked the President of the Board of Trade whether, in consultation with the Ministry of Health, he had safeguarded the country against the importation of anthrax-infected brushes.—Sir A. MOND (Minister of Health) replied: Samples of imported brushes from various sources have been examined from time to time, but so far only shaving brushes of Japanese origin have been definitely found to be anthrax-infected and capable of conveying infection to human beings. The further importation of Japanese shaving brushes into this country was prohibited in February, 1920, by an Order in Council which is still in force.

*The Heat Wave and Rabies.*

Major KELLEY asked the Minister of Agriculture whether, in view of the exceptionally hot summer, the public had any reason to apprehend a spread of rabies in dogs.—Sir A. GRIFFITH-BOSCAWEN replied: I am advised that inasmuch as rabies is a contagious disease which is only transmitted by means of the bite of an infected dog there is no reason to apprehend an increase in the number of cases of rabies on account of the hot weather.

*Vaccination and Small-pox.*

Mr. ROBERT YOUNG asked the Secretary for Scotland whether any of the cases classified as unvaccinated of those occurring in the Glasgow outbreak of small-pox in 1920 had been vaccinated at any time in their lives: and if so, what were the ages of such cases, and what was the interval between vaccination and the development of small-pox.—Mr. MUNRO replied: No case in the list of unvaccinated persons had been vaccinated *before* exposure to infection. Of the 128 cases classified as unvaccinated, 19, who were contacts with previous cases, were vaccinated during the outbreak, but *after* exposure to infection. The ages of the 19 cases were:—

| | | | |
|---|---|---|---|
| Under 5 .. .. | 8 cases. | 10–15 .. .. | 4 cases. |
| 5–10 .. .. | 6 „ | Over 15 .. .. | 1 case. |

The intervals between date of vaccination and commencement of attack were:—

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Days .. .. | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Cases .. .. | 1 | 3 | 3 | 2 | 5 | 2 | 1 | 2 |

Mr. YOUNG also asked the Secretary for Scotland whether the medical officer for Glasgow would be requested to inquire into those cases of small-pox classified by him in 1920 as unvaccinated, as he did in the small-pox outbreak in Glasgow in 1903–4, when he discovered that a number of the alleged unvaccinated cases had been vaccinated in infancy.—Mr. MUNRO replied: The answer is in the negative. The inquiry suggested would not affect the validity of the statistics, nor afford any information commensurate with the trouble and expense involved to the local authority.

# Medical Diary.

## LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, July 25th.—2 P.M., Mr. D. Armour: Operations.

TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations and Visit to Wards. 2.30 P.M., Mr. Addison: Visit to Surgical Wards.

WEDNESDAY.—2 P.M., Mr. D. Armour: Visit to Surgical Wards. Mr. Addison: Operations.

THURSDAY.—2.30 P.M., Dr. A. Saunders: Visit to Medical Wards.

FRIDAY.—2.30 P.M., Dr. Pritchard: Visit to Medical Wards. Mr. Baldwin: Operations.

Daily:—10 A.M., Visit of Post-Graduates to Wards. 2 P.M., In-patient Clinics and Operations.

# Appointments.

PEARSON, W. J., D.M. Oxon., has been appointed Physician-in-Charge of the Children's Department at Charing Cross Hospital.

Certifying Surgeons under the Factory and Workshop Acts: ROBERTS, J. C. L., M.D. Camb. (Ruabon); EVANS, J. (West Drayton).

# Vacancies.

*For further information refer to the advertisement columns.*

*Ashton-under-Lyne District Infirmary.*—H.S. £200.
*Ayr County Hospital.*—Lady Supt.
*Bedford County Hospital.*—H.S. £200. Asst. H.S. £150.
*Bethlem Hospital.*—Res. H.P. £25 per quarter.
*Birmingham General Hospital.*—Two H.P's. £100. H.S's. to Special Depts. £125. H.S. £100.
*Birmingham, Queen's Hospital.*—Surg. Registrar. £100.
*Bootle Borough Hospital, Derby-road.*—Junior H.S. £150.
*Bradford Royal Infirmary.*—H.S. £200.
*Brighton, Royal Sussex County Hospital.*—Casualty H.S. £120.
*Bristol, Cossham Memorial Hospital, Kingswood.*—Res. M.O. £200.
*Bristol Royal Infirmary.*—Cas. and Ophth. H.S.'s £120.
*British Honduras.*—Asst. M.O. $2430.
*Cardiff, King Edward VII. Hospital.*—Cas. H.S. £200.
*Carlisle Non-Provident Dispensary.*—Res. M.O. £300.
*Doncaster Royal Infirmary and Dispensary.*—Sen. H.S. £225. Jun. H.S. £200.
*Downpatrick, Down District Asylum.*—Sen. and Jun. Asst. M.O's. £350 and £300 respectively.
*Evelina Hospital, Southwark, S.E.*—H.P. H.S. Each £160.
*Glasgow, Bellahouston Hospital.*—Visiting M.O. to Ear, Nose and Throat Dept. £450.
*Gloucester County Asylum.*—Jun. Asst. M.O. £350.
*Great Yarmouth Hospital.*—H.S. £200.
*Jersey Poor House Infirmary.*—M.O. £750.
*Lancashire County Asylum, Winwick, Warrington.*—Second Asst. M.O. £300.
*Leeds Public Dispensary.*—Sen. Res. M.O. £250.
*Leith Hospital.*—Res. P. Res. M.O. Each 50 guineas.
*Manchester, Ancoats Hospital.*—H.S. £150.
*Manchester University.*—Demonstrator of Pathology. £350.
*Manchester, Victoria Memorial Jewish Hospital, Cheetham.*—Res. M.O. £150.
*Middleton-in-Wharfedale Sanatorium.*—Asst. M.O. £500.
*Newcastle-upon-Tyne Hospital for Diseases of the Skin.*—Hon. Clin. Asst.
*Newport (Mon.), Royal Gwent Hospital.*—H.S. £200.
*Northamptonshire County Council.*—Asst. Tuberculosis Officer. £500.
*Nottingham General Hospital.*—Res. Cas. O. £250.
*Plymouth, South Devon and East Cornwall Hospital.*—H.P. £150.
*Reading, Royal Berkshire Hospital.*—H.P. Second H.S. Each £200.
*Rochdale Infirmary and Dispensary.*—Jun. H.S. £200.
*Royal Naval Medical Service.*—Surg.-Lieuts. 26*s.* 6*d.* per diem.
*Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.*—H.P. £100.
*St. George's Hospital, S.W.*—Res. H.S. £50.
*Salford Royal Hospital.*—H.S. Cas. H.S. Each £150.
*Salisbury General Infirmary.*—Asst. H.S. £150.
*Seamen's Hospital Society, Greenwich, S.E.*—H.P. H.S. Each £150.
*Torquay, Torbay Hospital.*—H.S. £200.
*Union of South Africa (Natal Provincial Administration).*—House Surgeons, Grey's Hospital, Pietermaritsburg. £100.
*West London Hospital, Hammersmith-road, W.*—H.P. £100.
*Wigan County Borough.*—Tuberculosis Officer and Asst. M.O.H. £550.
*Wolverhampton and Midland Counties Eye Infirmary.*—H.S. £200.
*Worcester County and City Mental Hospital, Powick.*—Jun. Asst. M.O. £350.

# Births, Marriages, and Deaths.

## BIRTHS.

GRAY.—On July 12th, at Oporto, Portugal, the wife of St. George B. D. Gray, M.B., B.S., M.R.C.S., L.R.C.P., of a daughter.

HOLMES.—On July 11th, at Eldon House, Harrogate, the wife of Geoffrey Holmes, M.B., B.Ch. Cantab, of a son.

MOORE.—On July 12th, at St. Paul's-road, Clifton, Bristol, the wife of Clifford A. Moore, M.S., F.R.C.S., of a son.

## MARRIAGES.

ALEXANDER—JACKSON.—On July 14th, at Ballycastle, co. Antrim, John Alexander, M.B., Sefton Park, Liverpool, to Florence, daughter of the Rev. J. Jackson, D.D., Ballycastle.

## DEATHS.

EVANS.—On July 15th, at Bournemouth, Lieut.-Colonel J. W. Evans, I.M.S., of Trevaugham, Carmarthen, after a long illness.

MORRIS.—On July 17th, at Belmont-road, Wallington, Surrey, Graham Morris, M.D. Brux., M.R.C.S., L.R.C.P. Lond., Hon. Capt. R.A.M.C., aged 60.

# Notes, Short Comments, and Answers to Correspondents.

## THE LAW OF THE HEART.[1]

BY PROF. E. H. STARLING, C.M.G., M.D., B.S. LOND., F.R.C.P. LOND.

THE discovery by Harvey of the circulation of the blood and of the part played by the heart in carrying on this circulation is one of the few scientific discoveries which have become common knowledge. We have to think of the body as a collection of mechanisms or machines, each one of which is doing some form of work for one common end—i.e., the preservation of the body. For this work the oxidisation of the food taken in at intervals during the day provides the energy; thus each part of the body must be supplied not only with food derived from the alimentary canal, but also with the oxygen taken in with the air we breathe into the lungs. Like any other machine, each body mechanism produces, as a result of this consumption of the food, waste gases and other waste products, which have to be carried to the lungs or to the kidneys and there cleared out of the body. It is for this reason that the existence of the higher animal demands a common fluid, the blood, which can carry food, oxygen, or carbonic acid and which is maintained in continual circulation between all the organs of the body, so that the alimentary canal, for instance, may serve, for the maintenance of all parts and the lungs can supply oxygen to these parts, or collect the carbonic acid which is produced as a result of their activity.

But a uniform mechanical circulation would be of little value to the body, since the activities of all its parts vary within wide limits. Thus during muscular exercise the activity of the muscles may be increased ten-fold or more, and this increase means a corresponding augmentation in their call for oxygen and in the quantity of waste products, especially carbonic acid, that they produce. Since the oxygen is carried by the blood it follows that for the continued functioning of the muscles they must receive a blood-supply which is ten times greater during activity than during rest, if their activity is not to be brought to an end by a species of suffocation. We thus see that in any violent exercise involving the greater number of the muscles of the body, the circulation must be increased in force seven to ten times, and the heart, which is the pump maintaining the circulation, must under these conditions do from seven to ten times as much work as during rest.

### *The Mechanism of Adaptation.*

What is the mechanism of these adaptations? How is it that the heart is able to carry on a circulation which may vary from a passage of 3 litres of blood per minute up to 30 litres of blood per minute (these figures representing the extreme limits between which the output of the heart pump may vary according to the condition of the body). It might be thought that we are dealing here simply with the influence of the central nervous system, which adapts the activity of the muscles of the body to the requirements of the environment, and that the heart being a muscle would be stimulated to contract more strongly at the same time as soon as the latter calls into activity the voluntary muscles of the body. There is no doubt that the heart is under the control of the nervous system, so that its action can be altered, increased, or diminished by the brain in accordance with the needs of economy, but in the heart we find also a wonderful power of adaptation to the varying needs of the organism which is quite independent of the central nervous system.

This can be shown quite easily either in the cold-blooded or warm-blooded animal. The heart of the frog and tortoise can be cut out and will continue beating for hours or even days. It has long been known that the heart of the mammal would beat for some minutes after being cut out of the body, but if we take pains to ensure that the muscles constituting the walls of the heart continue to receive their supply of oxygenated blood, the mammalian heart can be made to beat for 8 to 12 hours after the death of the animal from which it is taken. In order to investigate this properly we want to make such a preparation that we can control at will all the conditions which may effect the action of the heart—viz., the amount of blood flowing into the heart from the big veins, the resistance which the heart has to overcome when it drives the blood out into the arteries, and the temperature at which the heart contracts. We must be able to measure at any time the output of the heart, the arterial pressure it maintains, its changes in volume during contraction, the pressure in all its cavities during each contraction, the amount of blood flowing through the blood-vessels of its walls and its chemical exchanges as measured by the amount of oxygen which it takes up, and the amount of carbonic acid which it produces. It is these chemical changes which give the energy for the work of the heart.

### *The Heart-Lung Preparation.*

All these procedures and controls can be carried out in the heart-lung preparation. In this preparation the pulmonary circulation, from right ventricle to left auricle, is left intact, and by means of artificial respiration the lungs are blown up rhythmically so that the blood in its course may take up oxygen and get rid of carbonic acid. The whole systemic circulation is got rid of and replaced by rubber tubes. A glass tube is tied into the largest branch of the aorta, all the other branches being tied, so that the blood driven out by the left ventricle can only escape by the glass tube. From the glass tube a rubber tube passes to a thin rubber tube contained within the wide glass tube. This thin rubber tube can be compressed to any desired extent by pumping air at a known pressure into the glass tube surrounding it. We can thus vary at pleasure the resistance which has to be overcome by the left ventricle and by maintaining a normal pressure in the beginning of the aorta ensure a proper supply of oxygenated blood through the coronary arteries to the muscular tissue of the ventricles.

It is this fact which makes it possible for the warm-blooded heart to continue to beat 8 to 12 hours after removal from the body. On the other side of the artificial resistance the blood is led through a spiral immersed in warm water to keep the blood at body temperature and then passes into a reservoir from which a wide rubber tube leads to a glass glass tube placed in the big vein opening into the right auricle. By means of a screw clip on this tube the inflow of blood may be regulated to any desired extent and can be kept constant while other conditions are varied. Thus in this preparation the three chief factors, temperature, inflow of blood, resistance to the outflow of blood, can be varied separately and at the will of the operator. Any of the heart cavities or any part of the circuit can be connected to manometers so as to record the pressure of the fluid at the different parts of the circuit, and by means of a side tube placed just beyond the artificial resistance we can allow the blood to flow off into a graduated cylinder and thus measure the time taken by the left ventricle to expel 50 or 100 c.cm. of blood, thus measuring the average output of the organ.

### *An Experiment Described.*

A typical experiment may be divided into six stages. Records of one experiment[2] show that in the first stage the heart was beating at a normal rate, 72 per minute, the blood pressure varied from 100 mm. Hg, and the output of the heart was 240 c.cm. of blood per minute. In the second stage the resistance to the flow of blood through the tubes was increased to such an extent that the pressure rose to 160 to 180 mm. Hg. The heart continued to beat, and for a time put out just as much blood as it did at the lower pressure. In the third stage the artificial resistance was suddenly reduced to zero, the arterial pressure fell to about 20 mm. Hg, but the heart beat regularly and the outflow of blood was unaltered because the inflow of blood had not been altered. In the fourth stage the inflow of blood was raised suddenly to 600 c.cm. per minute. The heart became bigger, but the regularity of its contractions remained unaltered, and it drove forward all the blood that it received.

The same thing happened in the fifth stage in which the artificial resistance was raised simultaneously with the venous inflow. The reason for these phenomena is that within certain limits the heart isolated from the body can respond to all the demands made upon it; it can overcome a higher resistance, and it can pump out more fluid. In the sixth stage the inflow of blood was further increased to 1200 c.cm. per minute, and the artificial resistance was increased until the blood pressure rose to 200 mm. Hg. This was too much for the heart, which began to beat irregularly and dilated widely. It would have failed altogether if the pressure surrounding the thin rubber tube had not then been released, to allow the artificial pressure to drop to a level at which the left ventricle could empty itself.

If during this experiment the amount of oxygen taken up by the blood had been measured and also the amount of carbonic acid given off by this fluid in passing through the lungs, an increase in both these amounts would

[1] Abstract of a lecture delivered at the Royal Institution on May 20th, 1921.

[2] Prof. Starling showed on the screen a kinematographic representation of the actual experiment described.

have been found during the stage at which greater demands were being made on the heart. That is to say, the greater the work done by the heart the greater the chemical changes necessary to supply energy. A motor-car may be running steadily with an even beat of its engines along a level road. When it comes to a hill it will slow up and finally stop unless the chauffeur increases the chemical changes and the energy of each explosion within the cylinder by opening the throttle and letting in more mixture of petrol and air. In the case of the heart there is no chauffeur, but there is some automatic regulation by which the heart increases its chemical changes and therefore the energy of each beat in exact proportion to the work which is demanded of it. It is the nature of this automatic regulation which concerns us now.

*The Nature of the Automatic Regulation of the Heart.*

By a careful observation of the changes in the heart in the experiment described above we may arrive at some clue to the nature of the pressure, but more accurate methods are necessary if we are to be certain of the correctness of our guess. We must under these varying conditions measure: (1) the pressure in the heart cavities produced at each contraction; (2) the volume of the heart cavities—i.e., the length of the muscle fibres of their walls. The first we measured in the experiment described by connecting the interior of each cavity in turn with a quickly acting manometer, the excursions of which are registered by an optical method so as to avoid the instrumental vibrations of a lever. The curve of pressure obtained under two conditions—i.e., low and high artificial resistance—could then be plotted. It must be remembered that the heart was sending on in each case all the blood that it received, though the work necessary under the high pressure was two or three times as great as that necessary to send on the blood at the low pressure. To measure the volume of the heart the ventricles are enclosed in an instrument known as a cardiometer. This communicates with a piston recorder so that the change of the volume of the ventricles at each beat can be registered on a moving surface.

The question we have to decide is, how does the heart know when it is relaxed that at the next contraction it will have to exert more force than it did previously, when the arterial resistance to be overcome was lower? If we measure the pressure in the ventricles in the manner just described we find that during the period of relaxation of the ventricles the pressure in its cavities is approximately zero, whether the artificial pressure which it has to overcome at its next beat is 50 or 150 mm. Hg. It is not, therefore, the tension on the walls of the heart which determines the strength of its contraction at its next beat. When, however, we come to measure the volume of the heart, we find that in the isolated heart this is directly proportioned to the work which the heart has to accomplish. Thus we find that the larger the heart—i.e., the more it is dilated during diastole, the greater is the pressure that it will get up at the succeeding contraction or systole.

We may put this in another form, as is shown by continuing our experiment over several hours, when we find that the worse the condition of the heart muscle, the more it must dilate in order to get up an adequate pressure. Other things remaining equal we thus see that the volume of the heart during diastole is a measure of its physiological condition, and we are not surprised that a failing heart means a dilated heart. Of course, there is a limit to this power of adaptation. As the heart dilates it is working at an ever-increasing mechanical disadvantage, and a point will finally arise at which this disadvantage more than counterbalances the physiological effect of dilatation. The heart then dilates widely and fails to empty its contents. Dilatation of the heart means elongation of the muscular fibres composing its walls, so that we may put the law of the heart in another way and say that the longer its muscle fibres the greater is the energy developed at each contraction. But in this form this wonderful power of adaptation possessed by the heart becomes part of the general properties of all muscular tissues, since the same rule applies to the fibres composing our voluntary muscles. Can we obtain any more precise and physiological conception of what is involved in this relationship between length of fibre and strength of contraction? Microscopic examination of the fibres, either of the heart or of voluntary muscles, show that these are composed of innumerable fibrils, so that internally the muscle fibre is made up of structures presenting an enormous extension of longitudinal surfaces. The more the muscle is stretched the greater will be the extent of these surfaces. A large amount of evidence, based on the electrical and chemical changes occurring in muscle as a result of excitation, points to the contraction as being essentially a surface phenomenon—a molecular change over the whole of the longitudinal surface which may result in a polarisation or depolarisation of its service and an increase of its surface tension, so that the muscle is a surface tension machine in which there is on excitation a direct conversion of chemical into surface energy. The greater the surface the greater will be the number of molecules involved, so that increased length of muscle must increase at the same time the total chemical changes and the total tension produced by the summation of the surface tension of each fibril.

It is only by such a change of molecular dimensions that we can explain the rapidity of events in a muscle (the insect wing muscle can contract and relax 300 times per second), or the high efficiency of the machine, an efficiency which A. V. Hill has shown may amount to 100 per cent. for each isolated contraction and over a length of time to 50 per cent. As directly measured in the heart-lung preparation we find a mechanical efficiency of about 30 per cent.

*Conclusion.*

It is impossible here to enter into the application of this law of the heart, but so far it has not failed in accounting for the behaviour of this organ under all manner of conditions either in health or disease. It is important to remember, however, that we are dealing here with the isolated heart. In the natural body the mechanisms which we have studied are fenced round, protected and aided by the complex activity of the central nervous system, which is always acting on the heart, balancing its activity against that of the blood-vessels, and coördinating it with the events which are occurring in every other part of the body. All these factors must be taken into account when we are endeavouring to form a conception of the total behaviour of this organ under the varying activities of the intact animal.

## EARLY BOOKS ON MEDICINE AND ANATOMY.

ON the afternoon of to-day, Friday, July 22nd, Messrs. Hodgson, at their premises in Chancery-lane, are disposing of an important collection of early books on anatomy and medical science formed by Prof. John Cleland, M.D., F.R.S., Emeritus Professor of Anatomy in Glasgow University. There are three incunabula (books printed before 1500 A.D.), and well over 100 other early books. Berengarius Carpus, the first to describe the vermiform appendix; Highmore, with his own account of the "antrum"; Thomas Vicary; Harvey; Spigelius; G. Asellius, discoverer of the "lacteal veins"; Bartholinus (four separate volumes); Meibomius; Eustachius; Stenson; Valsalva; Morgagni; Cowper; Malpighi; Boerhaave; Vesalius; Falloppius (sic); Willis; Cheselden—these are but a selection of the eponymous sixteenth and seventeenth century worthies whose original works are catalogued in this sale. The oldest book of the whole collection is the Natural Theology of Raimond de Sebondi printed at Daventry in 1480, and dignified by the mystic parentheses [H.C. 14067], which mean that the two great authorities on fifteenth century printing, Hain and Copinger, have collated, described, and numbered it. The other two, both of 1481, are mentioned by Hain alone, apparently; one is a translation of Galen, published at Ulm, and the second Articella's encyclopædia of ancient text-books of medicine, published with a commentary at Venice.

## RATS AND THE FILM.

ON July 15th an important weapon was released for use against the rat, in the shape of an excellent two-reel film prepared for the Incorporated Vermin Repression Society, by the Industrial Film Association, and exhibited to members of the Society and press representatives at the premises of the American Company in Wardour-street, London, W. The film occupied nearly half an hour, the first reel setting forth the ravages of the rat, and the second the means of prevention. A solitary rat was first thrown on the screen like any other kinema villain; there followed quayside glimpses with vessels at anchor, and rats skipping across lowered gangways and sliding down unguarded mooring-cables to disappear ashore. The scene shifted inland; a poultry-enclosure appeared, and was subjected to a grisly raid. Another scene was set in a larder; rats climbed the shelves and fouled the food, which later was borne away by an unobservant maid and deposited on the dinner-table with dramatic results. But all was not lost; in the gloom of his laboratory a scientist held a test-tube to the light; *Trichina spiralis* sprawled enormous across the screen, and then gave place to welcome methods of rat destruction. A harassed shopkeeper laid a large spring trap by his plundered goods, and we were privileged to see justice done on a raider. Varnish and open-air wire and "run" traps were shown in use, and the film concluded with a comparison of rat repression 20 years ago and to-day. The system of the old-style rat-catcher seemed to consist of drinking deeply from a pint mug; contrasted with his method was that of the Vermin Repression Society's experts shown at work in a warehouse. Guns, nets, ferrets, and

dogs were employed in a lively scene of carnage, which will do much to compensate for the suggestion of education so resented by many frequenters of the kinema. Briefly, the film is a good one, carefully thought out, and cleverly staged; it should be of much value in arousing interest in the rat problem. After its termination Lord Aberconway appealed on behalf of the Vermin Repression Society for a sum of £10,000, which he described as a good investment for business men. Both he and Mr. Alfred E. Moore, hon. secretary of the Society, emphasised the need of a cordon of rat panels throughout the country, in order to prevent a "rat week" in one neighbourhood necessitating a similar task in adjacent districts shortly afterwards. Mr. Moore also strongly deprecated the action of certain local authorities in dispersing with the services of officers appointed for the destruction of rats.

## A CITIZEN OF EMPIRE.

THE appointment of an assistant medical officer to the Swaffield-road Institution and Intermediate Schools was before the Wandsworth Board of Guardians last week, when Mr. Hormazd Ardeshir Topalia, an Indian, was appointed by a preponderating majority of votes. "Would you take it as an insult if I called you a foreigner?" a guardian asked, when Mr. Topalia replied: "Most certainly I should." It was the right answer, and we are glad it was given.

## APPROVED SALVARSAN SUBSTITUTES.

IN THE LANCET of May 21st (p. 1112) we published a list of those drugs which are approved by the Ministry of Health as substitutes for salvarsan, and may be supplied free of charge by local authorities to medical practitioners. This list was issued in Circular 166, which is now superseded by a new official list (List 13) dated June, 1921. The new list includes the five drugs noted by us on May 21st at the same price and dosage, and in addition:—

Arsenobenzol (Cerbiere, Modern Pharmacals, Ltd.), in doses of 0·1–0·6 g. (costing 1*s.* to 5*s.*). Novarsenobenzol (Cerbiere, Modern Pharmacals, Ltd.), in doses of 0·15–0·90 g. (costing 9*d.* to 4*s.* 6*d.*).

## GLASS-BLOWING.

THE ability to make one's own apparatus for use in the laboratory is an accomplishment of the utmost utility. Early instruction is needed from a teacher, but with care and patient application there is little difficulty in acquiring, at any rate for the construction of the more commonly used appliances, the necessary skill by means of a text-book, and a little treatise by Mr. Bernard D. Bolas entitled "Glass-Blowing"[1] is well adapted to the purpose. The various operations are clearly described, and the reasons for failure in producing satisfactory results are indicated, while instructions are also given in drilling, grinding, filing, and other necessary manipulations connected with the use of working in glass. Notes on various kinds of blow-pipes and lamps, and the utilisation of glass scraps add to the value of a very practical little manual.

## A COLLEGE FOR BLIND GIRLS.

*To the Editor of* THE LANCET.

SIR,—May I be allowed through your columns to draw attention to the new college for the higher education of blind girls which has recently been opened under the auspices of the National Institute for the Blind. The college is situated at Chorley Wood, on the foothills of the Chilterns, some 20 miles from London by road and rail. The building is a fine old mansion, standing on high ground on the south border of the wide and beautiful heath which tops that piece of country. The spaciousness of the house, the spread of the grounds, with the splendid trees therein, and the sense of openness which the position affords, together make it a place of exceptional interest for a school of this order. It would be difficult to find a place where other senses than sight received so many and such happy impressions.

The college is for the higher education of girls who are totally blind or have no useful degree of sight. The education will be as liberal as in the best public schools for girls, and the physical and mental development afforded will enable blind girls to live full and active lives at school, at home, and in professions. The principal is Miss Phyllis Monk, M.A., formerly of Girton College, Cambridge, and latterly a mistress of Roedean School, Brighton; with her is associated an efficient teaching and house staff.

I have visited the school myself, and can speak of the excellence of the arrangements for teaching and for the comfort of the girls; also on my visit there accompanied me a lady experienced in domestic affairs, and she was greatly impressed with the domestic arrangements and the evident happiness of the resident pupils. The fees for a place of this order are moderate, and there are some scholarships for girls of promise. There are, happily, not many blind girls of our class, but for these few there can be no better place of education and training than this new college. Saturday, July 23rd, will be visitors' day. Miss Monk will be pleased to receive doctors and others interested during the afternoon of that day. The address is "The Cedars," Chorley Wood, Herts. The school is about ten minutes' walk from the station across the heath; the London-road passes within a hundred yards of the school.

I am, Sir, yours faithfully,

London, W., July 16th, 1921. N. BISHOP HARMAN.

## CHOLERA IN ASSAM.

THE Secretary for India was recently asked in the House of Commons whether he was aware that large numbers of coolies engaged in tea-gardens in Assam were lately induced by agitators to desert to their homes, and whether many of these deserting coolies died on their way to their homes from disease and privation. Mr. Montagu circulated in reply a full summary of two communiqués published by the Governments of Assam and Bengal. From these communiqués it appeared that the coolies struck work on May 22nd; disaffection spread, and by the middle of the month between 6000 and 7000 coolies had left the gardens. Food was provided by the Government for those who needed it, and one issue of rice was accepted; but the coolies were then led to believe that acceptance of food thus supplied entailed their being sent back to the gardens. Government provision was made for the sick and destitute women, children, and aged. By May 19th about 3000 coolies had collected in and around the station yard at Chandpur; these premises rapidly became grossly insanitary, and cholera broke out amongst the coolies themselves and also amongst the station staff. Persuasion having failed to move the coolies they were dispersed by force; apparently many of them scattered through the town, remaining there as a great source of danger to the population. Dr. Batra, of the Health Department, made full arrangements for dealing with the sanitary and medical situation, but was much hampered by the non-coöperation of the men's leaders, who professed their inability to transfer some 500 of the men left in Chandpur to certain disused jute godowns, where about a thousand had been collected. Dr. Batra was unable to buy milk, vegetables, and other necessaries without the signature of the local leaders; finally he was compelled to withdraw with his assistants from his extemporised hospital, but remained in the town in readiness to render any assistance in his power. His estimate of the deaths from cholera during the latter part of May was 160 at the lowest figure.

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A CONGRESS is shortly to be held in Vienna at which the international aspect of child welfare will be discussed by a number of distinguished men and women from various countries, including Prof. Pirquet, Mrs. Jane Adams, Miss Edith Pye, Miss Kathleen Courtney, and Dr. Hilda Clark.

*B. Burjorjee.*—Our correspondent does not give his complete address. The only translation of Prof. I. Boas's Diagnostik und Therapie der Magenkrankheiten of which we know is one by A. Bernheim, published by F. A. Davis Company, Philadelphia, in 1907, at 25*s.* The latest German edition was reviewed in THE LANCET of May 21st, 1921.

*Professional Advertisement.*—Our correspondent, who does not entrust us with his name, is reflecting on the professional standards of foreigners, and cannot be certain that the institutions from which they derive their degrees and diplomas will have no objection to the advertisement. This might not be the case with British practitioners.

[1] Glass-Blowing. A Laboratory Handbook. By Bernard D. Bolas. With numerous diagrams in the text by Naomi Bolas. London: George Routledge and Sons, Ltd.; New York: E. P. Dutton and Co. 1921. Pp. 106. 3*s.* 6*d.*


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